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ABSTRACT

Some of the best undergraduate teaching now going on in American colleges and universities is described in this special report, part of a series published twice each year. The three disciplines focused upon are Biology, English, and Political Science. Four of the best learning experiences from each field are presented, each the subject of an indepth analysis written in lay terms. In addition, five or six other teaching experiences in each field are described briefly. (JMF)

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From the editors of

Change

The Magazine of Higher Learning

2 REPORT ON TEACHING

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ANALYSES OF SOME OF THE MOST NOTABLE IMPROVEMENTS IN AMERICAN UNDERGRADUATE TEACHING

ABOUT THIS SPECIAL REPORT

The process of selecting what is deemed worthy of wider appreciation invariably leaves its trail of the disaffected, of those who were excluded rather than included. Politically, the process of identifying particular excellence is better done by an external agency such as Change than internally by the campuses or the disciplinary associations. This much is understandable, as it is hazardous these days for consensus-based organizations to make the necessary distinctions between what is worthy and less worthy.

What is more worrisome are the handicaps that venturesome faculty often seem to impose upon themselves. There is a curious self-consciousness that affects many innovating teachers, as a result of which they wish not to be publicly identified as "experimental"; or, alternately, believe public scrutiny to be tolerable only if it ignores the warts and fissures. Such faculty either work in inhospitable climates or are infected with a special paranoia, both of which are regrettable. Either way, one needs to be aware of them, and institutions and professionals must confront the twin handicaps head-on.

Teachers have their professional as well as their institutional interests. There is the private and sacrosanct turf of the faculty, only rarely invaded by external considerations, and there is now the corporate and collective need of educational institutions to be far more creative in enticing students to learn. Until these two interests are more closely meshed, we shall invariably find that neither is served well. It is time to think not only of one's own turf, but also of how an openness to new possibilities in teaching may benefit others on campus and beyond. Until educators move away from their self-directed privatism, we shall continue to be tied to the provincial cottage industry which college teaching now largely represents.

—George W. Bonham

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THE STATELESS ART OF TEACHING EVALUATION

by L. Richard Meeth

Systematic, comprehensive, and valid evaluation of teaching has been an educational problem for many years. It continues to evade educators, although most administrators and legislators desire it as a meaningful way to determine rewards and sanctions for faculty, and most serious teachers seek it as a way of improving their performance and more closely relating what they do to what students learn. Most evaluation of teaching has resulted instead in unfair and inconclusive distinctions among teachers without establishing reliable or valid relationships between what teachers do and what students learn.

The evaluation of teaching presumes consensus among educators about what constitutes effective teaching. But educators don't know what makes up effective teaching; they don't have a good research base, don't agree on the validity of what research they do have, don't believe the evidence that is presented in that research, and don't act on any of it in a broad systematic way throughout higher education.

More than 80 centers have been developed in colleges and universities in the last decade that focus on improving teaching. All have in common a lack of consensus about what is most important to improve. This problem springs from the dearth of research about the relationship of teaching to learning. If we better understood how students learn, we might better understand how and what teachers ought to teach. The many lists of teaching activities prepared over the years, while isolating both overt and covert behaviors, cannot be ranked very conclusively from most important to least important in terms of producing learning. Each college faculty that develops an evaluation form lists those items that they value as most important without knowing whether or not their items are significant, peripheral, or inconsequential in terms of learning.

The problem is not only deciding what should be improved about teaching, but also knowing when or if things have improved. In other words, there are few standards by which teaching can be judged. The *Change* Reports on Teaching, for example, focus on "improved" teaching primarily because improvement provides a comparative standard for evaluation, i.e., a behavior is more effective today than it was yesterday. When an absolute standard of good or best teaching is implied, it is hard to find agreement on what that might be. Some have settled simply for words like "innovative" or "different" as a standard, but these have no necessary correlation with quality or learning outcomes. Accepting what exists as a base and attempting to improve it by appropriate, responsible evaluation, while plodding along without an overall frame of reference, seems best in the absence of definitive research or agreed standards.

If there are few standards, there are even fewer criteria against which effectiveness or improvement can be evaluated. Robert Thorndike, writing in another context, suggested three categories of criteria—ultimate, intermediate, and immediate—that can be applied to teaching. Ultimate criteria have to do with learning outcomes, intermediate criteria with the process of teaching, and immediate criteria with the sense of experiences of teaching or learning. Obviously, immediate criteria are furthest removed from learning

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DEFINING IMPROVED TEACHING

I. Ultimate Criteria

The students learned what the instructor was trying to teach
- in cognitive, affective, and/or psychomotor development
- in rate and/or absolute achievement

Learning continued after the formal experience ended
- rate and/or extent of later learning known

Students retained what was learned

Teacher goals and/or outcomes for the learning experience were met

Student goals and/or outcomes for the learning experience were met

The learning experience related to other learning experiences students might have had (congruence, continuity, sequence): prior learning was capitalized upon: learning increased in other formal experiences the students had at the same time; learning improved in the rest of a sequential series the students had afterward

The learning experience positively affected the attitudes and/or behavior of the teacher, other faculty members, and administrators within the immediate learning community

The learning experience cost less than traditional ways of delivering the same experience: the same learning for less money; more learning for the same money; more learning for less money

Enrollment levels were sustained or increased in subsequent offerings of the learning experience

II. Intermediate Criteria

Students were motivated to learn

The structure of the learning experience was determined by the goals of the experience

The content was well ordered, comprehensive, and appropriate to the abilities of the learners

Teacher involvement in the learning experience was in harmony with the goals of the experience

Time was provided for students to contemplate and respond

Rewards and sanctions were appropriate to the goals of the learning experience

Students understood what they were doing, why they were doing it, and how they would be evaluated in the learning experience

Goals and/or outcomes were clearly specified

Evaluation criteria, standards, and methodologies were clear and appropriate to the goals of the experience

Student products reflected the goals of the learning experience

The kind and variety of instructional resources were congruent with the goals of the experience and abilities of the learners

Methodology was appropriate to the goals of the experience and the abilities of the learners

outcomes. Student evaluations of teaching fall into this category and, while better than nothing, are still a long way from relating teaching to learning. The sense of learning assessed during or immediately after the experience frequently has little to do with the long-term effect of the experience.

Many institutional programs of faculty evaluation center on methodology without much regard for criteria. It often appears more important to decide whether a colleague visits the classroom by invitation or by chance than to determine what will be observed during the hour. Very few peer observations of teaching are based on a predetermined set of criteria to be assessed. When these do exist, as often as not they have been borrowed from another list at another college. Even when inclusion of each item is hotly debated, the discussion is rarely grounded in a researched rationale of effectiveness. For example, educators know that immediate criteria (a sense of the experience of learning and teaching effectiveness) may have nothing to do with actual learning or teaching effectiveness, yet the primary criteria applied to postsecondary teaching relate to student perceptions at the time of the formal experience.

The criteria selected to apply to the teaching experiences described in these issues were developed by the editors interacting with the teaching project advisory board. Some of their ideas about the difficulty of developing criteria were reported in the February 1976 issue of *Change* (page 44). In most cases intermediate criteria were used in selecting experiences for these Reports primarily because even the most improved teaching has not been well researched. These criteria are by no means an end; simply a point of departure and a way of classifying in the hope of seriously moving forward the evaluation of teaching. They are reprinted here because they are generally applicable to postsecondary teaching and may expand and focus the debate about what should be included in such a set of criteria. (Copies of these criteria are available by request.)

Another problem confronting serious evaluators is the lack of effective models. Barak Rosenshine of the University of Illinois wrote recently, "The number of studies which have looked at both teacher behavior and student outcomes is embarrassingly small. The quality of many of these studies is questionable and the results of these studies are not sufficiently strong or clear to direct...evaluation of teachers. What is lacking is research demonstrating an experimental or correlational connection between teaching skills and measures of change in student achievement and affect. The state of the art, then, is one of a lack of research." This dearth of research became clear as we sought a bibliography on teaching effectiveness and discovered that none existed that covered the last decade. Attempts to put together a set of references (see page 27 of this Report) with the help of the advisory board produced no more than 225 significant entries and even some of these set forth questionable research methodologies and outcomes. The situation is no different today than it was in 1967 when Donald O'Dowd reported, "Both in summaries of research and in original reports, results of relatively rigorous studies are hopelessly confused with results of studies that have employed non-experimental or otherwise inferior methods; and methodological requirements for sound inferences about the effects of variables are grossly violated." It does seem strange that a profession as broadly practi-

cal and important to the society would continue so long on such a shallow base of evidence. It seems even stranger, however, that the society would not have insisted long ago on more evidence of what works and why, and, if empirical evidence is not appropriate as a base, would not have urged moving toward another perhaps more humanistic base of understanding of teaching effectiveness.

What is known about teaching, however, does go beyond what is practiced in most colleges and universities. The review of research by Wilbert McKeachie and Stanford Ericksen's *Memos to the Faculty*, for example, offer every faculty group new insights into improved teaching. These are cited in the *Change* bibliography, which also is available by request.

Finally, evaluation of teaching has suffered from gross inattention. Quoting O'Dowd again, "Higher education, by its very resistance or inattention to the study of its major activity, has denied itself the very means by which it can improve." In spite of the numerous teaching improvement centers, research on teaching is nominal and incidental in most colleges and universities. The privacy of teaching, the disinterest of some disciplines, and limited rewards for improvement have all contributed to this inattention. By failing to give serious thought to the evaluation of teaching before trying to improve it, faculty, in the sciences at least, deny themselves the essence of what they are attempting to provide their students—the knowledge of results. Thus, the standard for students is higher than it is for teachers.

And yet teaching goes on and learning continues. Failure to solve the problems of evaluation has not stopped the activity of teaching or its ultimate effect. There is ample evidence that students are learning and changing as a result of their college experiences. Nor is it appropriate to cease teaching until the problems of evaluation are solved. But it is fitting that more attention be paid by governments, disciplinary associations, professional associations, and campus faculties to finding ways of rewarding both the research on teaching and the evaluation of teaching based on that research. As one effort to increase this attention, *Change* is sponsoring a national meeting of the education officers of the major disciplinary associations to discuss further ways of evaluating and improving teaching.

The evaluation of teaching effectiveness is a stateless art. The problems are serious and difficult to overcome. Inattention to the development of evaluative standards and criteria will never produce researched models of effective teaching or methodologies for determining effectiveness. The effort to improve teaching will not be complete until there is a better base for evaluating that improvement. To this end, the Reports on Teaching are dedicated. ■

How Does Change's Undergraduate Teaching Program Work?

Twice each year, *Change* publishes a special Report on Teaching, devoted to describing some of the best undergraduate teaching now going on in American colleges and universities. The major disciplinary associations are cooperating in this effort by serving as the initial screening mechanism for identifying good teaching efforts, after which leading authorities from each field assist *Change* in making the final selection of those projects to be featured in each Report.

The basis for selection is a set of carefully developed criteria (listed on page 4) that define improved teaching in terms of learning goals and outcomes, with special emphasis on the adaptability of the learning experience to other institutions and other disciplines.

Selection also presumes a special cooperative spirit of those teachers involved, so that they may serve as a source of information and assistance to others interested in adapting their methods. The 29 teaching approaches presented in this Report are accompanied by the name and address of the faculty person to contact for further information.

Each Report on Teaching focuses on three disciplines. Four of the best learning experiences from each field are presented, each the subject of an in-depth analysis written in lay terms by one of the leading education writers in the country. In addition, some five or six other teaching experiences in each field are described briefly.

The first Report, published in March 1976, covered the fields of chemistry, history, and psychology. Later Reports will focus on the fields of economics, physics, music, sociology, art, mathematics, philosophy, and others. Faculty interested in participating should contact their disciplinary association.

Evaluate the
REPORTS ON TEACHING
See Back Cover

BIOLOGY

THE ANACHRONISMS OF BIOLOGY EDUCATION

by Richard A. Dodge

"Traditional biology programs are rapidly becoming anachronisms for too large a segment of the constituency of higher education." This recent statement from the education committee of the American Institute of Biological Sciences (AIBS) reflects a growing concern that biology education has neither kept pace with realistic career training developments nor provided for the public's need to understand the discipline. Many studies and reports have pointed to an overproduction of conventionally trained biologists, and they question society's ability to absorb ever increasing numbers of them. While biological educators are currently enjoying slightly improved employment prospects, the increase in teaching positions may reflect recent concern for environment, energy, and health-related topics, rather than for biology in the traditional sense. Students appear to be pursuing the subject as preparation for what they perceive as more idealistic careers.

A recent editorial in *BioScience* suggests that these students are seeking the "other biology." The other biology is seen as an application of broad biological understanding to fields that once neither required nor expected such knowledge. The emergence of environmental legislation, for instance, has stimulated a need for practitioners to conduct the necessary studies for impact statements. While placement announcements for these positions more often indicate a preference for legal or economic backgrounds, some training in the biological sciences is certainly perceived as germane.

Social scientists, too, are recognizing the need for more biological emphasis. A recent National Science Foundation (NSF) reorganization placed biology and the social sciences under the same directorate. Still the emerging marriage of the social and life sciences has not been well received by more traditional biological educators, and as a result, social science departments are teaching more and more biology while biology departments often teach little of a social nature.

Cognizant of this trend, however, some two-year and small four-year institutions are beginning to effect a merger of the disciplines. Such courses as biology and ethics; the social concerns of biology; or biology, man, and society now compete for undergraduate enrollment. For as society becomes increasingly aware of the influence of biological knowledge on population control, disease, food production, environmental protection, genetic regulation, and so on, more and more nonbiologists will be involved in what must be considered at least "semibiological" fields. How will traditional academic biology departments respond to this changing application of biological knowledge? Unfortunately, many programs are ill-equipped to provide flexible and adaptable training for these students. On the other hand, the programs described in this series—at Purdue, South Dakota State University, Antelope Valley College, San Diego State University, Tulane, and elsewhere—have in fact focused on the need for a broader outlook on biology education and for more flexibility in the teaching of the subject matter.

The AIBS education committee believes that the

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needs of biology students are more far-reaching and expansive than many academic departments realize. In discussing the problem of anachronisms, the committee concluded that a desirable program of biological education must improve the ability of individuals and society to adjust to rapid change brought about by advances in biological knowledge; emphasize the potential role of biology education in social, political, and economic decisions; recognize and endorse the need in higher education for alternative programs of study in biology and for pedagogical alternatives in its instruction that will address themselves specifically to the first two goals mentioned; encourage the development, testing, and implementation of alternatives in biology education in prestigious institutions across the nation; and perform continuous evaluation of the impact of these programs and revise them accordingly.

The concern is that conventional biology instruction tends to serve the field's several subdisciplines rather more than those areas of interest or concern outside the discipline's traditional purview. All too often, it serves an elite clientele with little regard for the needs of the larger society. The old-school biologist may look with scorn on the applied aspects of the discipline, and the attendant concern that erosion of academic rigor results from the teaching of applied subjects may help to explain the banishment of many related and dependent studies from the biology department. Thus, in contrast to chemistry, applied biology must often now be taught in schools or departments other than biology—in the school of agriculture, for example, or of natural resources.

This escape of satellite subjects from biology's orbit has occurred largely because biology programs are not flexible or open enough to provide the specialized training required in applied fields. There have been efforts to design individualized, modular, or minicourse biology programs—represented in this series by Postlethwait, Myers, Beishir, and Jordan—but they have emerged in response to the special needs of students in such fields as agriculture, health, social biology, wildlife management, and other areas.

By contrast, the usual introductory course in biology may reflect the biological subdiscipline studied by the instructor, who has probably had little training in, or exposure to, law, politics, economics, and the social and psychological sciences. Frequently, he is ill-equipped to explain the subtleties of a continually evolving career market. Development of open-ended and multiple-track individualized instruction, however, allows for varied learning experiences, and the recent work of Volpe and others is beginning to fill the need for a more synoptic approach to the subject.

A great deal of evidence indicates that most people will follow a single career during their lifetime. However, the notion of "career" itself has expanded, and NSF projections indicate that by 1985, a large proportion of science and engineering graduates will have found employment outside the academic and research fields as currently defined. The present system usually does not provide an education that permits the learner career mobility, flexibility, and adaptability. Traditional training prepares the graduate for narrow career choices. Once a biologist, traditionally trained for research, enters the teaching field (at least 70 percent of all biologists have primary responsibilities to teaching), there is little opportunity to bring his or her expertise to focus on the educational enterprise. The pedagogical aspects of the biologist's training and opportunities to explore alternative fields have been neglected in favor of research. And so the cycle repeats itself, and biology education drifts further from the needs and concerns both of its students and of society.

Generally, the first and only exposure to biology a nonmajor receives is in a required freshman course. Because many introductory courses are designed for the potential major, a typical freshman botany, zoology, or general biology program has little practical value for the nonmajor. The last thing a nonmajor needs is to understand molecular biology, microscopy, or the life cycle of a liverwort. Yet the discipline persists in promoting the myth of the necessity of traditional biology in general education. The time has come to devise programs that explore biology as it pertains to every citizen's life, environment, mental and physical health, and political decisions.

The *BioScience* editorial referred to before suggests "such a program would be directed toward what have been called the parabiological professions, such as the social worker who must know enough physiology, anatomy, and nutrition to be able to organize effective outpatient programs for the aged; the staff officer for a regional environmental board who must combine ecology, soil science, chemistry, psychology, political science, and aesthetics in implementing a generalized land-use program." Instruction should provide multidisciplinary training programs designed to provide students with the resources to meet changing career goals. A few such programs—the minicourse and BIOTECH projects, Mulligan's zoo experiences, and Jordan's BioCO-TIE program—have already met with some success. And certainly Avila's work with disadvantaged students has demonstrated that nonbiology students can and will profit from meaningful biological experiences. But more is needed.

If NSF and Bureau of Labor Statistics data are to be believed, the system will be full of life science PhDs within a decade. Many will be underemployed or employed outside the field of biology. The teaching and research opportunities for these developing biologists will not be met by programs now found in traditional departments. What about the "other biology"? □

THE AUDIO-TUTORIAL APPROACH TO LEARNING

by Fred M. Hechinger

"Up to that time, I had thought that education was the delivery of what you know. Now I'm convinced that education isn't a delivery system at all. Learning must be done by the learner. He must be involved."

The speaker was S. N. Postlethwait, professor of biology at Purdue University, and the "up to that time" of his reminiscence refers to his teaching days prior to 1961 when he developed the audio-tutorial system of teaching. Or rather, as he would insist, of learning. "I had the hopes of the typical professor," he recalls in gentle self-mockery. "You know, a Nobel Prize for growing some special kind of corn." But his dreams were soon submerged in the reality of a student body that came predominantly from the farms of Indiana. The diversity in backgrounds between the farm youths and those from more conventionally middle-class backgrounds was wide enough to pose a serious problem in an introductory botany course.

Many of these were first-generation college students who were "perfectly intelligent but not up to academic work. They needed help." But the conventional delivery system evolved over the years made it difficult to offer such help. Sam Postlethwait began looking for new ways to deal not with masses of freshmen but with individual students.

FRED M. HECHINGER is the assistant editor of the editorial page of the New York Times. He is the former education editor of the paper, and author, with Grace Hechinger, of Growing Up in America (McGraw-Hill).

In 1961, quite by accident, he visited a colleague in the school of education's department of audio-visual aids who suggested he tape a special lecture to which students could then listen individually. Postlethwait followed the advice, but quickly realized that "recorded sound on its own can be a pretty poor communication tool." At first he tried to help students overcome that handicap by having them use illustrated textbooks while listening to the taped lecture. Soon he added special materials to supplement the books. After a while he began to prepare instructional programs by surrounding himself with these materials—plants, specimens, photographs, laboratory implements, and so on—while he taped a conversation as if a student were in the room with him. Before long he would interrupt himself to observe and handle a particular plant before describing its condition.

"It wasn't a lecture anymore," Postlethwait explained. "It was the beginning of a new system. It's not perfected yet, and probably never should be. The longer I teach, the more I find that nobody really knows what teaching is."

In the early stages of his experiment Postlethwait selected 36 students and gave them only the tape and its associated learning assignments, but without the usual lectures, section meetings, or laboratory sessions. The students did no better and no worse than those who went through the conventional academic requirements, but with considerably less expenditure of fixed hours and while doing their work at their own time and convenience.

At that point, Postlethwait asked his students what basic ingredients they thought would be necessary to restructure freshman botany. They listed: (1) independent study; (2) a general assembly session at least once a week ("If you have 800 students in a course, they want to know how all those different people are involved. It's something of a paradox that in an individualized learning situation you also need shared activity. There simply are no absolutes."); and (3) one weekly half-hour small assembly for no more than 10 students in which the students could teach each other as they reviewed what they had learned. ("The only time you really learn a subject is when you start teaching it. There must, therefore, be an opportunity for students to behave like teachers.")

From these concepts a pattern developed that now constitutes the audio-tutorial system—a system without formal lectures, recitations, or laboratory sessions. At its core is the learning center, a bright, cheerful room with 62 booths set up weekly with materials for a specific section of the students' work. The basic equipment in each booth is a tape recorder (and sometimes an 8mm movie or 35mm slide projector) and a variety of objects to help illustrate the week's studies. "Most learning delivery systems," says Postlethwait, "provide answers to phenomena about which stu-

dents do not yet have any questions. I don't believe you ought to lecture about thunder and lightning on Monday and then have the students see and hear it on Wednesday afternoon."

The student may assign himself to a booth at any time of the day until approximately 10 p.m. and, after arranging the appropriate textbooks and a study guide outlining the week's objectives, listen to the tape. What the student hears through the earphones is the voice of the senior professor in the course guiding him or her through a variety of observations, exercises, and activities. At any moment the voice may ask the student to turn off the tape and perform a relevant experiment, collect and record specific related data, confirm an observation by looking through a microscope, or read a specific reference in a professional journal.

Example (the tape speaking): "What were your conclusions concerning the first part of our hypothesis—that some pigment other than chlorophyll might be involved in a growth event? You might like to look at the seeds again...." Or (again the tape): "Earlier in the semester you viewed two films on the germination and development of the bean seedling and one on the germination and development of the corn seedling. I'd like you to view these films again and see if you can identify a growth phenomenon affected by light that we have not discussed yet. Will you turn off the tape now, please, and view the film...." Bulky materials, or items too costly to be placed in every booth, are on view at central locations for use by all students.

Individual study can be interrupted at the student's convenience, allowing him to move on to scheduled classes in other departments, to take a break, or to exchange observations with others engaged in the same studies. Throughout the day, an instructor or teaching assistant is on duty in the learning center to ensure that any student can take any question to a faculty member at any time.

To make the student master of his or her learning time, all but two residence halls have also been equipped with learning centers serviced weekly with the required materials. Thus, students may literally learn at any time of day or night. Resort to unconventional hours proved a major initial hurdle to be overcome. Maintenance staffs objected to changed closing hours in the academic buildings; supervisors of the dormitories jealously guarded their limited space and often were reluctant to set aside the required footage even for miniature learning centers. "They seem to think residence halls are for sleeping and eating, but not for learning," Postlethwait observes with the smile of one who knows the ways of the establishment.

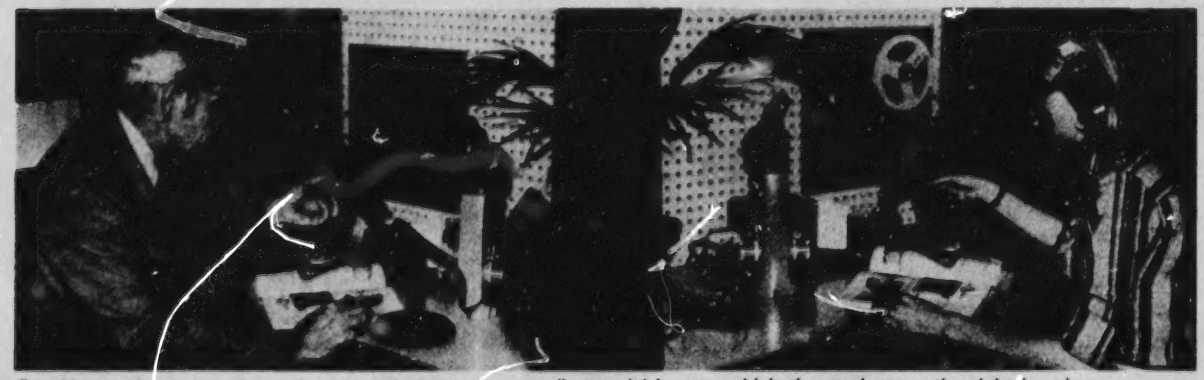
Near the end of each week's work, a general assembly is scheduled, but without any set format. Sometimes a guest lecturer is brought in for another point of view; a movie may be shown to back up some of the tutorial observations; or students may report on some of their discoveries. "For us the assembly has become a tool, not a pattern," says Postlethwait. "If we don't have anything to take up, we just cancel it." To encourage student participation, the last part of the assembly is reserved for the writing of individual summary reports on the proceedings. The only intrusion of academic formality is the periodic use of assembly time for examinations.

The half-hour small assemblies, on the other hand, are group presentations and discussions of the material covered that week. While the teaching assistant—who may be an undergraduate—is theoretically in charge and actually grades each participant's performance, the stress is on the students' exploration of the topics. "We do have tests," says Postlethwait, "but the goal is really not the grade as much as getting the students to organize the subject in their own minds. This can be very successful if the instructor understands a little psychology. I've never met anybody who knows something and doesn't want to tell about it. Sure there's pressure on those who don't know, but that's what college is for, too."

> "The fundamental issue in education is change. But individuals start from different levels. I have to make students understand that the initiative must be theirs and that they must move aggressively toward their goals. It means retraining them."

At a recent small assembly, the teaching assistant asked what symptoms the students had noticed in a plant deprived of potassium. One student described the plant's condition and how it compared with that of a healthy specimen. "How could you tell that it was the potassium?" a classmate asked, adding that he had noticed a similar condition in a plant with adequate access to potassium but seemingly lacking some other nutrient. Others registered their assent or dissent. The teaching assistant returned continually to a basic question: "What was the process involved in observing these changes?"

Postlethwait used his system experi-



Teaching and learning: S. N. Postlethwait prepares an audio-tutorial lesson, which the student on the right is using.

mentally for some seven years until, in 1969, another enthusiast joined the program. Robert N. Hurst, now senior professor in Biology 109, a required freshman course in zoology, extended the new method to include both botany and zoology. (The zoology and botany learning centers now occupy adjoining space.) The expanded subject area, moreover, gave special relevance to another vital ingredient of the Postlethwait-Hurst audio-tutorial system: the minicourse.

Before Hurst's arrival, the program lacked true individualization, even when students were encouraged to pace themselves. They periodically complained that they were covering a lot of the same topics in both the basic zoology and botany courses. This is a recurring problem in collegiate education, and as students continue their undergraduate work such repetition often affects a wide range of courses. One graduate student testified that five of his undergraduate courses had all begun spending weeks covering exactly the same definitions. "That," says Postlethwait, "is using repetition irresponsibly."

A solution was sought in the creation of courses within courses—minicourses designed to give students a maximum number of options. Each minicourse is covered in a separate manual, and the two courses of Purdue's botany and zoology audio-tutorial system now encompass 70 or more published minicourses. A minicourse may involve as little as 15 minutes or as much as two or more weeks, depending in large measure on the prior knowledge the student brings to the particular topic. A student who has completed the entire array of minicourses that make up the content of the whole course is eligible for a C. An A or B requires a demonstration of excellence over and above mere completion—individual research, additional reading, or a variety of other efforts.

"The fundamental issue in education," Postlethwait says, "is change. But individuals start from different levels, and you must keep that in mind all the time." When students confront a new system, they are inevitably worried, since they have generally been trained to expect the initiative to come from the teachers. "I have to make them understand that the initiative must be theirs and that they must move aggressively toward their goals. It means retraining them." Once they understand this change in roles, many (but by no means all) are converted. The professors consider the battle won when, usually during the second semester, students say: "You're not the teacher. You just give out grades."

To reach that point calls for much subtle personal attention and some ingenious initial tactics. Postlethwait plays his part with the skill of a seasoned politician. The 58-year-old, tall, handsome, silver-haired biologist (BA, Fairmont State College, West Virginia; PhD, University of Iowa) exudes good humor and perpetual concern. Although endlessly engaged either in improving the system, explaining it to visiting experts, or lecturing about it from coast to coast and abroad, he seems utterly relaxed with students. "On the whole, my contribution has been pretty small," he says. "The students' input is what makes the program. Some people are shocked when I say that I often know no more than my students, that I learn with them. I'm not shocked. Some have higher IQs than I. People don't understand that the role of the teacher is not that of fountain of knowledge."

When Postlethwait's annual army of 880 freshmen first arrives, it is divided into groups of 20, each assigned to a separate time. Each young man or woman is given a large cardboard on which to write his or her name in heavy black letters. A photographer snaps individual pictures, showing the oversized nameplates. All the while, Postlethwait memorizes faces and names, and when he meets with the little group minutes later for a 20-minute pep talk and explanation of what's ahead, he startles and calms the most worried or sullen by addressing them as if they were old friends. "There's Old Grinny Sam coming out telling them it's all going to be terrific," he chuckles, giving a credible imitation of what some of the more cynical old-timers have occasionally been heard to say about his well-known exercise in mass psychology.

After 20 minutes, "Sam" then turns the group over to its teaching assistant for some more specific explanations of the rules. The information, moreover, is backed up by a 22-page mimeographed pamphlet ("What's It All About?") that answers such questions as, Where do my classes meet? How can I do excellent work in this course? How can I get help? (telephone numbers included), and so forth. By the time the over 800 students have had their first meeting with the senior professor, a relationship has been established that will not permit the impersonal frigidity of the typical lecture course to develop.

Although Hurst and Postlethwait agree that on average the total amount of time required for coverage of the material is less than the six hours per week required by a conventional four-credit course, the audio-tutorial students generally have the impression that they work longer hours with the unconventional system. "That's because they begin to think of all the hours they spend on it in the learning center as 'their own time' rather than mandated attendance—and that's not a bad way to view one's education," Postlethwait said.

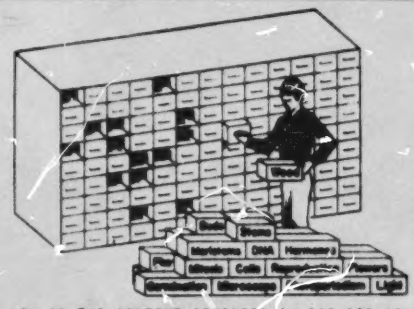
At the conclusion of each year's course, a questionnaire is given to students to solicit their reaction to the system. Over the years, 80 percent of the students have considered the course to be the best method of learning within their academic experience. Among the 20 percent who disagree—some violently—are those who dislike the subject to begin with as well as others who regard solitary booths, without traditional arrangements such as compulsory classroom attendance, as a threat. Deprived of the security blanket of fixed routine,

Learning experience:
Introductory Botany and Introductory Zoology through the audio-tutorial system. No prerequisites. Enrollment: over 800 students in each course.

Other descriptions:
An Audio-Tutorial Approach to Learning. Minneapolis: Burgess, 1972.
Study Guide: Minicourses-What Are They? West Lafayette, Indiana: Purdue University Research Foundation, 1972.
Minicourses in Biology. Philadelphia: W.B. Saunders, 1976.
A more extensive bibliography is available from the Minicourse Development Project, Purdue University.

Similar programs:
The audio-tutorial system is being used in a wide variety of subject areas and institutions, among them the State University of New York College at Brockport and the elementary education program at Cornell University. In addition the system has been adopted by institutions in Canada, England, Germany, Australia, France, Ireland, Costa Rica, and Puerto Rico.

Contact:
S. N. Postlethwait, Department of Biological Sciences, Purdue University, West Lafayette, Indiana 47907, (317) 494-4080.



II. HOW IS THE CONTENT ARRANGED IN BIO 108-109?

Figure 3. Minicourses permit the content to be adjusted to individual needs.

A. Minicourses - What Are They?

1. *Minicourse - A complete unit of subject matter. Each has a set of objectives which should be mastered completely. An instructional program (Figure 4) consisting of a series of learning activities has been carefully designed to help you achieve all the objectives.*

2. *Learning Activities - The things you do to help you achieve an objective. (Making observations, doing experiments, watching a video tape, reading a journal article, talking with the instructor or friend, labeling diagrams, etc.).*

3. *Objectives - The minimal achievement required for each minicourse. Exam questions are based directly on these statements (objectives).*

4. *Helps - The learning activities have been sequenced (ABCDE) and coordinated by audio tape. An instructor is available at all times to assist when any part of the content is not understood - use them. Many textbooks are available from a variety of sources.*

You should then go to the Learning Center during the hours listed below. (Be sure to bring your Study Guides.) Once at the Learning Center, check the tag boards in the coffee room to see which booths are open. Once you find a booth open, turn the tag over to indicate that you are using the booth. Then go to the booth and start your work.

After you complete your study of a minicourse, you should take the formative quiz for that minicourse. The quiz will be posted in the display case outside Room 317 for 109 minicourses and will be available using the computer for 108 minicourses. Use a piece of scratch paper to jot down the answers and then check your answers with the key posted in the Learning Center. These formative quizzes should help you assess your readiness to master this minicourse. Though success on the formative quiz does not guarantee success on the minicourse quiz in the hourly exam, it will serve as a pretty good indicator.

Several things are very important to your success in ISS:

1. Bring your Study Guide.
2. Start your study by reading the objectives in the front of the Study Guide.
3. Do ALL of your studying in the Learning Center. Do all experiments and look at all demonstrations when you are asked to do so. The full meaning and usefulness of many of these will be lost if you don't do them at the proper time.
4. Ask questions!! The instructor is being paid to help you -- take advantage of it.
5. Clean up your mess when you are finished.
6. Adjust your schedule to suit yourself.
7. Please turn your tag back over when you are finished so that someone else will know that your booth is open.

ISS Learning Center Hours (Rooms 316 and 317)

Both Learning Centers are open 74 hours per week.

Monday, Wednesday Thursday & Friday	from 7:30 AM - 10:30 PM
Tuesday	from 7:30 AM - 5:30 PM
Saturday	from 8:30 AM - 12:30 PM

Two pages from the student handbook What's It All About?

they feel as if they are adrift.

The fact that students are graded continually on their weekly, half-hour small assemblies tends to counterbalance the lack of compulsory attendance. It allows students to judge their progress while retaining their independence. "But remember," says Postlethwait, "the basic philosophy is to treat students as adults. What they know is important rather than where they've spent their time."

Postlethwait insists there is little validity in statistical comparison of test scores with conventional programs since the approach and actual coverage of material differ so greatly from the traditional course. Within broad limits, however, he found that grades of students in the audio-tutorial courses are persistently higher, especially among students in the A and B category of achievement. An offshoot of the system in Australia has borne this out.

The success of the audio-visual program seems to be underscored by its widespread acceptance on a variety of campuses and in many subject areas in the United States and abroad. It is being used, for example, in chemistry at Clemson University in North Carolina and Auburn University in Alabama; in psychology at the University of Cincinnati; in geology at Ohio State and the University of Michigan; in geography at the University of Wisconsin; in sociology at Columbia College, Missouri; and in western civilization at Southwestern Michigan College. Several hundred public schools have adapted the system to their level of instruction. American Airlines uses it in its training of flight crews in Dallas, Texas. "It is difficult to keep an exact count," Postlethwait says, "because programs move with their supporters from one campus to another."

Moreover, tapes and minicourse outlines are already being produced in limited numbers for continuing and off-campus, community-based learning. A four-part course on sexuality (The Human Reproductive System, Sexual Maturation—What's Normal?, Pregnancy and Birth Control, and Venereal Disease) is already available.

Sam Postlethwait approaches the experiment—he still deliberately views his task as one of changing, questioning, revising—with a mixture of perfectionism and diffidence. An out-of-synch movie projection that impedes the students' progress evokes a flood of obviously sincere apologies in public and self-criticism in private. A student's impetuous attack—"I hate the audio-tutorial"—is greeted with an invitation to sit down and discuss such blanket condemnation. ("Audio-tutorial is too big a thing to hate altogether.")

But another part of Postlethwait's reaction to mounting signs of interest within the academic community is the veteran teacher's caution. "I've seen too many people come out here, pick up a tape recorder and a study guide, and think they've got the program," he says. "But that's not it. What we really are after is putting an end to education as a mere delivery system." ■

CREATING A CORE CURRICULUM THROUGH COOPERATION

by Jerrold K. Footlick

On a cool September morning in 1969, Garnie Johnson and Willie Gore, biology instructors at Northeastern Junior College in Sterling, Colorado, began the 105-mile drive to Fort Collins. They had a problem and thought that John Patrick Jordan, who directed Colorado State University's biology core curriculum, could help them solve it. Awed by Jordan's reputation, they were no less anxious after the meeting ended. "This is your problem," Pat Jordan told them. "I can help, but if you want to make progress, you'll have to win the support of your colleagues in the community colleges."

What the men had discussed was sophomore biology. Johnson and Gore were confident that the freshman program they taught at Northeastern was sound. Like most freshman courses, it was a survey, a sweeping outline of the field, and they could comfortably introduce their students to the subject. But they were also aware—and secure enough to admit—that the sophomore program was not as good as it could be. By their sophomore year, students were ready to dip deeper into biology, thus requiring special skills from the professor. The problem was that a single instructor simply could not be competent in every area for which he or she was technically responsible.

Johnson and Gore hoped to enlist the aid of Colorado State University (CSU), but at first encountered skepticism among other faculty members. Yes, it was likely that CSU could help provide a better sophomore core program in biology; but surely that would mean the big land-grant university in Fort Collins would haughtily take over. "Fear was spelled CSU," says Johnson. In Colorado, as almost everywhere else, the mutual suspicion of four- and two-year colleges runs deep.

Yet everyone was willing at least to talk, and out of these talks—and a common interest in improving the teaching of biology—grew BioCO-TIE (Cooperation via Televised Instruction in Education). It offers a sophomore core program in biology that has demonstrably raised both the performance level and the interest level of college sophomores. It has also proved that two- and four-year colleges can, in a concerted display of respect and cooperation, solve common problems. Or, as Johnson says lightly, "we have captured the resources of the four-year institution."

BioCO-TIE is operated by a consortium comprising Colorado State University and 12 two-year campuses in the state (with 2 others scheduled to join in the fall of 1976). It provides a complete package of three core courses (Ecosystem Biology, Cell Biology, and Developmental Biology), and relies heavily on audio-visual material, slides, graphics, and videotapes produced at the color television studios at CSU. The courses are so constructed that instructors at any institution may adapt the material as they choose—to provide nearly all of the instruction, for example, or only some of it, or to serve simply as enrichment. It can be offered to a class of 500 students or of 25, or to individual students working at their own pace. "Each user," says Jordan, "believes the system is built for her or him. It is not so much ours as mine."

The courses themselves are serious and more difficult than junior college sophomores usually see. Cell Biology introduces the students to the building blocks of biological units and the mechanisms by which they function. The course covers cell structure and organization, energy flow, the chemical composition of cells, nutrition and metabolism, and the genetic aspects of cell function. Developmental Biology traces a continuum: the impact of genetics, cell multiplication and specialization, the maturation of organisms, the results of uncontrolled multiplication (as seen in cancer), and finally, the aging process and senescence. The third course, Ecosystem Biology, treats principles in population genetics, the flow of energy in ecosystems, and population dynamics and distribution. It introduces popula-

JERROLD K. FOOTLICK is a general editor of Newsweek and formerly the magazine's education editor.

tion sociology and community biology. The course focuses on natural populations and man's interaction with them.

The process of designing BioCO-TIE began with a series of conferences in the spring of 1970 involving faculty from CSU and the two-year institutions. It was clear from the outset that a delivery system would be needed, and that audio-visual technology, particularly videotape, should be at the heart of that system.

For this, the biology planners had an existing model: CO-TIE, developed by CSU's Office of Educational Media and the college of engineering, was already being widely used in offices and factories around Colorado. It distributed 50-minute, stand-up lectures by Colorado State faculty to adults on the job.

But the lecture pattern would not do. The biology teachers doubted their teenaged students would respond to a straight TV lecture. And in biology especially, a black-and-white picture could not carry the message. But to modify the system accordingly would cost money that was in no one's budget.

Jordan, a well-organized and persuasive Oklahoman, first convinced the Denver-based Boettcher Foundation to plant $15,000 in seed money. (The Charles F. Kettering and Alfred P. Sloan Foundations later became additional sponsors.) For the big money Jordan went to the National Science Foundation. NSF sent a team of biologists to look over the plans; the result was a $500,000 breakthrough that not only sent BioCO-TIE on its way, but also made possible a number of ancillary benefits. For one, it allowed Colorado State to purchase four color television cameras and support equipment. (The neighboring University of Northern Colorado was given CSU's black-and-white equipment.) And the grant enabled the two-year colleges to buy microscopes, spectrophotometers, and a variety of other equipment.

Purchase of equipment consumed about half the NSF grant, with most of the remainder used for evaluation and to pay the teachers who prepared the material. With initial expenses now out of the way, the cost of BioCO-TIE to other institutions is and will remain remarkably low. All materials are being sold at reproduction cost and as production rises, cost falls. Jordan estimates that a set of BioCO-TIE materials for all three courses, including slides, transparencies, notes, and color video cassettes, costs about $5,000. The only other significant expenses would be a video playback unit ($1,200), and perhaps two monitors ($350 each)—a total expense of roughly $7,000.

The original television production proved difficult. BioCO-TIE courses could be taught by either CSU or junior college faculty, but turning a classroom instructor into a television instructor required training. Print-oriented faculty had to be weaned to television. Their test efforts were tense and uncomfortable. They moaned aloud at the results. It took directorial patience, hours of retakes, and considerable imagination to produce finished tapes.

The planners, meanwhile, debated over and over, hours at a time. They argued over length and concluded that shorter was better. (One tape runs to 40 minutes, but others run less than 4 minutes; the average is under 12.) They struggled over such incongruous issues as whether to add musical backgrounds to the tapes. (Some of the tapes, such as a delightful graphic presentation on natality, carry twinkling music; more serious presentations do not.) The planners debated redundancy. How much repetition is necessary? If you are introducing a new term, do you leave it on the screen throughout an explanation, do you blink it on and off, do you simply flash it at the start and at the conclusion? They searched for technical precision, which sometimes meant choosing the best single term among several in common usage. They even argued—the easterners and the westerners—over pronunciation: Is it parENchyma or parenCHYma?

BioCO-TIE's directors believe these debates glued the program together. "We subjected everything to peer evaluation," says Jordan, "the videotapes, advance sheets, class notes. Nothing went out that both the teacher and user faculties did not discuss and approve." Neither the four-year nor the two-year college instructors found it easy at the beginning to overcome a natural reluctance to criticize. But everyone learned gradually to participate in and relish the give-and-take.

Indeed, peer evaluation has not ended. The two-year colleges are connected with each other and to the university by telephone and computer linkup to swap information. Before each course is offered, teachers are brought to the CSU campus for four days of briefings; after each course's conclusion, they return for a day of debriefing.

A videotape is being filmed while professors conduct a peer-evaluation session.

"Since most freshman and sophomore students are enrolled in two-year colleges, biology offerings could be improved both in the universities and the two-year colleges if consortia were established to plan biology curricula."

Ted F. Andrews
Vice President for Academic Affairs
Governors State University

From such scrupulous planning has emerged an impressive package. For classroom instruction, almost 100 videotapes have been prepared. Nearly 2,000 slides and transparencies are available for individual study or overhead projection in the classroom. Each student receives class notes outlining the topic to be covered in each session. Advance sheets set the goals for each class session; provide an index to relevant slides, tapes, and other resources; and give suggestions for discussion. The advance sheets are intended primarily for the teacher, but many instructors distribute them to their students.

In addition, BioCO-TIE offers a complete set of laboratory exercises keyed to classroom topics. One, for example, is a tape that explains the process of staining. "Instead of having to explain staining to small groups of students and work through it with them," says Jordan, "we can let the entire class watch the process demonstrated properly, and in 10 minutes they know what to do." Laboratory supplies are also available, prepackaged if so requested. BioCO-TIE offers resource materials, reprints of articles, audiotapes, and additional laboratory exercises. If the teacher wants them, BioCO-TIE will even provide examinations. Some instructors use the exams virtually verbatim; others pick the questions they want. For any of them, the examinations serve as a guide to what the developers expect students to learn.

Each instructor is free to use the BioCO-TIE program as he or she finds acceptable. Typically, in each of the three courses, a student will begin preparation for a class session by perusing the class notes. These explain the sequence of the topics to be covered and highlight the key points in the videotapes. In class the teacher is likely to give an introductory lecture. Then he will switch on the videotape. Afterwards, the instructor may lecture again and open the class for discussion. Sometimes two or three tapes as well as other visual material may be used in one session. Outside the classroom, the audio-visual materials are made available in a central study location for students to use on their own time. Before examinations, the materials can be reshown in either informal or organized study sessions.

The central concern, of course, remains the student. "From the beginning," says Gore, "we always asked ourselves, What are we trying to get across to the students?" To make sure that the goals were never out of sight, BioCO-TIE built a "front-loaded" evaluation. Psychologists from CSU's Human Factors Research Laboratory sat in on the planning conferences and constructed a remarkably detailed testing mechanism. The evaluators used questionnaires, individual interviews, and group interviews to create, for each of the courses, three "profiles": a student profile, school profiles for both the high schools from which the students were graduated and the colleges they would attend, and a faculty profile.

"We wanted to fly over the course before we played it," Jordan explains. "If we did something wrong, in terms of our goals, we wanted to know why." By any measurable standard, BioCO-TIE did very little wrong. The heart of the evaluation was a comparison between students who had taken BioCO-TIE courses both at the two-year colleges and at CSU with those who had not. Those students with BioCO-TIE backgrounds were found more likely to take advanced biology courses, to take higher-level courses, and to receive higher grades.

The enthusiastic faculty knew how good BioCO-TIE was because they had taught the courses in other forms. For students, these were the first sophomore biology courses that they had ever seen, and they had complaints. "You can't stop a TV set and ask questions," observed one CSU senior. Some found the class notes less than instructive, others found the tapes occasionally too long, and, as the planners discovered somewhat to their amusement, still others were annoyed when instructors attempted to add humor to their segments.

The final test for the students is how BioCO-TIE compares with their other courses. On that basis, they seem just as captivated by the program as their instructors. A woman who had transferred from Community College of Denver's Red Rocks campus to the University of Colorado's Denver campus summed it up: "It didn't take me long to find out that I was just better prepared than the kids who didn't have BioCO-TIE."

In late 1974, the American Institute of Biological Sciences sent a team of four to evaluate the results on behalf of the National Science Foundation, and its conclusions provided a resounding stamp of approval. The committee did find flaws: some inadequate management of laboratory equipment, occasional weaknesses in planning, difficulty in schools without proper faculty or administrative support. Yet its report was overwhelmingly positive. The committee described the audio-visual material as "of very high quality." It praised the low cost of the program, and the increasingly warm relationship between four- and two-year college faculty; and it determined the exportability of BioCO-TIE to be high.

In fact, as word of BioCO-TIE's success has spread, so too has the export

Learning experience:
Project BioCO-TIE involves three courses: Ecosystem Biology, no prerequisites, enrollment: 1200; Cell Biology, prerequisites: basic zoology and basic botany, enrollment: 800; and Developmental Biology, prerequisite: Cell Biology, enrollment: 500.

Other descriptions:
"BioCO-TIE: The Genesis of a Cooperative Curriculum Improvement Program," *Junior College Science Teaching*, Vol. 2, No. 4, 1973.
"Cooperative Curriculum Improvement Program: Biology (BioCO-TIE)," Ninth Report of the International Clearing House on Science and Mathematics Curriculum Development, 1972.

Similar programs:
In addition to the 14 colleges in Colorado participating in the program, other institutions using BioCO-TIE material include the University of Florida at Gainesville, Purdue University, and Wayne State University in Detroit.

Contact:
John Patrick Jordan, 203 Administration Building, Colorado State University, Ft. Collins, Colorado 80523, (303) 491-5371.

process. It is already being used in such states as Indiana, Florida, and Michigan, and inquiries have arrived from more than a dozen others. Soon, with the cooperation of the Burgess Publishing Company and Encyclopaedia Britannica Films, mass production will begin.

One of the most significant results of the program can be found at Colorado State. Accustomed to enrolling more academically oriented freshmen and sophomores than the junior colleges, CSU could offer its lower-division students tougher core programs. As a result, the juniors and seniors who had been on the Fort Collins campus throughout their college careers performed more ably in advanced classes than the junior college transfers. Now the gap between the two groups is almost nonexistent—and CSU faculty agree that the BioCO-TIE courses have improved their own core curriculum as well.

"There is no question that our core courses are different, and better," says Thomas Sutherland, a CSU professor of animal science who teaches Ecosystem Biology. "We can show a tape and quickly touch the high points. Then we have time to talk about the ramifications." This improvement is not lost on the CSU students. "We found that the biology core program was developing a reputation for having good courses," says Marvin Paule, a biochemist who coordinates Cell Biology. "That leads to better students coming into them and the whole course lifts." Paule seems just as pleased by the effect that BioCO-TIE has had on his biochemistry classes. "When they take my advanced courses," he says, "the students have already had so much of the material. It enables us to dig that much deeper into biochemistry."

Already BioCO-TIE's developers are looking to the future. Having made their initial capital investment, they need a remarkably lean budget to succeed for the long term. The continuing process of self-evaluation allows them to smooth out the rough spots—courses are already being updated and modified. "With time, we're going to change the people in this program," Jordan says. "The new people may not be sure how to deal with it. So we must consider ways to bring the next generation of faculty into the system." And he adds with a confident smile, "but that's only while we wait for our students to become the teachers." ■

Modular Microbiology

When Antelope Valley College instituted a two-year certification program for registered nurses six years ago, the general microbiology class at this 8,000-student community college promptly doubled in size. The sudden increase in enrollment significantly aggravated a condition that had already existed for some time at this thriving school located in the desert community of Lancaster, California: Too much instructor time was being devoted to basic laboratory techniques for students who were often underprepared.

Registrations for the one-semester general microbiology lab include, in addition to science majors, students in nursing, premedical and predental programs, and public health, as well as home economics. Many have weak science backgrounds or, having been out of school for a number of years, have lost confidence in their abilities in a laboratory situation. As a result, instructors found it necessary to preface laboratory periods with lengthy explanatory lectures, and to repeatedly demonstrate routine laboratory procedures while lab sessions were in progress.

In an effort to relieve the tedium and frustration she sensed both in herself and in her students, Lois Beishir designed and implemented four years ago a self-paced, self-instructional modular program that imparts needed instruction in laboratory techniques in a way that is at once challenging, effective, and enjoyable for student and instructor alike.

The self-instructional lab program consists of 53 printed modules, each a self-contained unit concentrating on a single laboratory technique or concept. Listed first in each lab module are prerequisite skills (from previous modules) needed to complete the experimentation, followed by materials and equipment required—all standard for any ordinary microbiology laboratory. Then objectives are stated, including specific behavioral objectives that clearly tell the student what he or she should know or be able to do upon successful completion of the module. A factual discussion presents information and concepts necessary for understanding the experimental procedure, after which the actual activities to be carried out are described in a careful step-by-step manner. Illustrations are used freely to amplify the text and to diagram complex experimental schemes.

Concluding the module is a self-evaluative review that enables the student to determine for himself whether he has successfully completed the experimental process and fulfilled the specific objectives of the module. If he concludes that he has not, the student can repeat a module or any part of it. For those students who have mastered the concepts and procedures of a given module, there are suggestions for designing and/or performing related experimental work that will increase their competence, knowledge, and understanding of the subject.

In addition to reducing student and faculty frustration, the self-instructional lab program has markedly increased student interest and comprehension, as evidenced by the undertaking of voluntary laboratory projects and by significantly higher grades on midterm exams—an average score of 78 percent now as compared with 65 percent before adoption of the self-instructional approach. A drop in the attrition rate from 12 percent to 2 percent further documents the success of the new program. For the faculty, reduced explanation and demonstration time means more time for the advancement of complex conceptual material, and more time for paying attention to individual student progress and engaging in meaningful laboratory discussions. The program has been adopted by a number of institutions, including the University of Portland, San Antonio College, and the University of North Carolina.

"My laboratory environment has improved so much," remarks Beishir, "that it is no longer work. It is now a most enjoyable teacher-student learning experience."

For more information: Lois Beishir, Department of Microbiology, Antelope Valley College, Lancaster, CA 93534, (805) 943-3241.

SYMPATHY VS. STANDARDS: TEACHING THE UNDERPREPARED

by James P. Degnan

Like most universities during the chaotic late 1960s, San Diego State established (some would say largely in response to the threats and demands of student militants) a federally sponsored Educational Opportunity Program (EOP) that made it possible for academically unqualified minority students—blacks, Chicanos, American Indians, and others—to enter the university. The idea behind the EOP at San Diego State and elsewhere was that such students, even though conventionally unqualified, somewhere along the line had demonstrated abilities indicating that they could succeed in the university and that they should be given a chance to try.

"But," says Gerald Sanders of San Diego State's biology department, "these students were not succeeding. Blacks and Chicanos made up 10 percent of our introductory biology courses and most of these students [8 out of 10 as opposed to 1 out of 10 whites] were failing or dropping out. The administration was desperate. Its reasoning was, 'We've got them here now, we can't let them fail. Something's got to be done.'" Some things *were* being done, Sanders relates, including a few not so ethical things. "In some cases," he says, "minority students were being allowed to drop the course after they'd taken their final exams."

Seeking a valid solution to the problem, Sanders explains, the EOP, with the full support of the San Diego State administration, decided that a special program for educationally disadvantaged minority students—e.g., high school dropouts, parolees, students who had failed or never taken science in high school—was needed, a program that would be sympathetic to their special needs yet would maintain standards at least as high as those in the regular biology courses. Vernon Avila's program—one that he had developed and directed in 1972-73 at the University of Colorado—was chosen. "Even if in principle people are against such programs," Sanders remarks, "they have to admit that Vernon's works."

It is clear that at least some people, including a few of Avila's colleagues with whom I spoke, are opposed not only to special college programs for the educationally disadvantaged but also to the basic idea of the EOP. They argue that EOP represents a kind of reverse racism since it is based directly or indirectly on what amounts to a predominantly racial quota system. Because the university must accept, say, 10 percent conventionally unqualified blacks, they point out it must, given a limited enrollment, reject 10 percent conventionally qualified whites. In 1970, the historian Daniel Boorstin outlined the opposition case when he wrote: "In the university all men are not equal. Those better endowed or better equipped intellectually must be preferred in admission and recognition.... If we give in to the armed demands of militants to admit persons to the university because of their race, their poverty, their illiteracy, or any other nonintellectual distinction, our universities can no longer serve all of us or any of us."

Regarding the controversial nature of Avila's program, one of his colleagues says: "I take a pragmatic attitude toward the program. It's a good program; it works; we desperately needed it and continue to need it. The people who criticize it because it is designed primarily for EOP students forget that when the program was established it was too late to debate the issue of whether we should have an EOP; the EOP was here, a fact of life. The students who needed Avila's program were here. The time for debate of any meaningful kind was over. We had a specific, urgent problem to solve and, as far as I'm concerned, Avila stepped in and solved it."

Specifically, what Vernon Avila accomplished in one year was to lower dramatically the failure and drop-out rate among minority students to 1 out of 10, the standard failure and drop-out rate for whites. "And he did this," says Sanders, who coordinates the lower-division biology courses at San Diego State's huge 33,000-student campus, "not by watering down content, not by lowering standards, but, if anything, by

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A bilingual teaching assistant helps students with an enzyme investigation as Vernon Avila (right) observes.

raising them higher than the standards that prevailed in many of the regular biology sections. He was tough, so tough at first I thought he was going to have riots on his hands. But the students, rather than resenting his toughness, seemed to like him all the better for it."

A thin, intense Mexican American in his middle thirties, Avila is the son of a coal miner, born in the bleak, mesa-studded country of southern Colorado and raised in New Mexico. Of the ugly scar on the left side of his neck, he casually explains: "The result of a high school argument, missed the carotid artery by about half an inch." When he wasn't dodging knife-wielding schoolmates, Avila was engaged in the even tougher task of trying to convince his teachers and counselors that he seriously intended to become a scientist. "I'd always had a high IQ," says Avila, "but that made little difference. Back in those days [the late 1950s] nobody could even imagine a person of my background becoming a scientist. They all wanted me to take courses in woodshop." Nevertheless Avila overcame the opposition: He took and did well in the required science and math courses, and eventually went on to complete his PhD in biology at the University of Colorado, compiling an outstanding academic record along the way.

Despite his background, Avila is far from being an embittered campus militant. He is pleasant, urbane, highly articulate, and reasonable. While he sees his program as essentially designed to serve the needs of minority students and to attract this group into careers in science, about 10 percent of his students are whites and he would like to include more. (The percentage of whites in the program varies roughly according to the percentage of whites enrolled by the EOP; since that percentage is increasing, Avila's program will doubtless reflect that rise.)

A number of factors account for the success of the program at San Diego State. For one thing, with the cooperation of the EOP, Avila has the opportunity to interview and choose which EOP students will enter his program, a chance the teacher ordinarily does not have. This enables him to make a personal determination about whether the prospective student is truly "educationally disadvantaged." The term means more to Avila than a poor high school academic record or a dearth of introductory science courses. "It can mean," he says, "that the student comes from an environment that has actively discouraged him from being interested in science, an environment which has repeatedly told him, 'People like you don't go into science; that's a foolish interest you must forget about.'" For such a student, says Avila, "I can serve as a role model. The student can look at me and say, 'He's from the same kind of background as I, from a ghetto or barrio; if he can make it, so can I.'"

Another advantage is that Avila has fewer students in his classes than are in the regular biology course (about 75 compared with 150). This means more of that all-important factor—personal attention for each student. Again and again, Avila's students say the same thing: "Whenever I have a question or a problem that I can't straighten out in class, I know that he is there to try to answer it or solve it in a private conference. I never feel that I am intruding; he is always willing to work with me until I understand what I am doing. And he constantly reminds us to call him or come to his office for an appointment if we have problems. I have never had this kind of attention in other classes."

The program's organization is also a significant asset. Instead of the traditional system in which lectures and labs are often taught by different instructors,

Learning experience:
General Biology for educationally underprepared students. No prerequisites. Enrollment: 75.

Other descriptions:
"Science and Mathematical Preparation of Minority Students with Implications for Introductory Biology Courses," *AIBS Educational Review*, March 1975.
"Biology 101-102, Section 4: Biology for Educationally Disadvantaged Students," *Journal of the Colorado-Wyoming Academy of Science*, April 1973 (Abstract).

Similar programs:
University of Colorado at Boulder. Various versions of a special course for educationally disadvantaged minority students exist across the country.

Contact:
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Avila's students have the same instructor for both. Further, in addition to one three-hour lab per week and two one-hour lectures per week, there are weekly discussion groups, something not featured in the regular biology courses. These groups, made up of 25 or so students, meet for one hour three times a week and are directed by the same lecture-lab instructor. This organization enables the professor to achieve a number of desirable goals, not the least of which is a tight coherence between what is said in the discussions and lectures and what is done in the labs.

The course textbook is Sherman and Sherman's *Biology: A Human Approach*. There are three major (60-question) objective tests given during the semester, five or six write-ups of various lab experiments, and about an equal number of short essay quizzes (e.g., discuss the major differences between mitosis and meiosis). Avila uses the quizzes to help students with their writing, a skill in which they, like most college students, are notoriously deficient. The three objective tests—the prime source of the student's grade—are essentially the same as the tests Avila and other instructors give in the regular biology sections. And last semester, random student samplings of performance on these tests demonstrated that students in the special course actually performed better over the semester than did students in the regular biology sections.

If students do learn more in Avila's course, it is because they are highly motivated; it is because without talking down to his students Avila makes biology—to use that overused but in this case perfectly accurate word—relevant. A typical day for Avila and his students proceeds as follows: first, a lecture on genetics with special emphasis on Gregor Mendel's theory of hereditary characteristics. Rather than introducing the theory in the traditional way—i.e., by a discussion of Mendel's famous experiments with smooth and wrinkled peas—Avila, whose classes typically enroll large numbers of blacks, employs a much more germane approach: He begins by discussing sickle-cell anemia, explaining how and why this disease exists primarily in blacks, and what Mendel's theory has to do with our understanding of the disease. Having captured the interest of his class, he moves on to a more traditional presentation.

Following the lecture, Avila's students might have a lab demonstrating some of the truths of Mendel's theory. Students learn how to determine their own blood types. They conduct experiments demonstrating, for example, why parents with type AB blood cannot produce offspring with type O blood; why certain races are predisposed to certain diseases; why people are destined to have eyes, hair, and skin of a particular color or such physical characteristics as free or attached ear lobes. Then Avila might hold one of the small discussion sessions during which students have the opportunity to raise questions about matter covered in the lectures and labs.

Always striving to involve his students totally, to get them to see how the science of biology relates to every aspect of their lives, Avila uses discussion sessions not merely to cover scientific and technical matters but to point up the moral, philosophical, and political questions biology raises and often helps to answer. Controversial topics such as abortion, birth control, euthanasia, and ecology versus economics are broached, and difficult questions are confronted: When does a fetus become human? Is it moral to destroy a fetus that is likely to be born deformed? Can "pulling the plug" be morally justified? Is ecology another name for racism? Not only are these topics of compelling interest to his students, Avila says, but in discussing them and explaining that the students must eventually come to their own conclusions, he is able to make a point too often neglected in the traditional teaching of science: that the scientist is more than a technician; he or she is first of all a moral agent with the responsibility for using science in ethical ways.

A student examining blood for the presence of sickling.

In keeping with his major goal—to persuade minority students to enter the natural sciences—Avila also uses the discussion sessions and every other opportunity he gets to talk about career opportunities and to urge his students to take advantage of them. "Minority students are grossly underrepresented in the natural sciences," he maintains. "Only 5 percent of them major in the natural sciences. There are over 200,000 earned PhDs in the sciences [including mathematics] in this country," he says, "and of that number only 900 are

Exploring the Psychology of Animal Behavior

"You can try to explain the action of automobiles by taking them off the road and tearing them apart," says James A. Mulligan, S. J., of Saint Louis University in Missouri, "but the nuts and the bolts don't explain anything. You've left out the driver." Before you can understand an automobile's behavior, he explains, you must acknowledge the driver's psychology.

According to Father Mulligan, that same dilemma exists in animal behavior. Most biologists, he suggests, are reductionists, striving to explain, say, bird songs by chemical and genetic analysis. Their goal is eventually to predict phenomena. But a bird with a repertoire of six songs may repeat them in no consistent order. It is entirely possible, says Father Mulligan, that the bird is making music! And, indeed, if we apply existing psychologies of musical perception to the bird, such psychologies offer an explanation of its activities.

This holistic approach requires one to examine animals in complex terms that take into account evolution, heredity, local ecology, environmental competition, and the behavioral differences among different species of the same family. Students enrolling in his introductory course in animal behavior, each of whom has some background in either biology or psychology, are trained in the description, classification, and quantification of animal behavior. First, the students (approximately 30 per class) observe fish in a laboratory aquarium. Then they go off to the excellent

blacks. As for Chicanos—of whom there are about 12 million in the United States—only 100 have science PhDs, and only 24 of those are in the biological sciences. The statistics for American Indians are even worse: At last count, only about 12 had science PhDs."

Avila contends that minority students have an almost "irrational fear of science. At the University of Colorado," he says, "we found that 75 percent of the minority students who dropped out of the university did so because they could not pass or were simply afraid to take the required science courses." Compounding the problem are well-meaning but rather short-sighted academic advisors who almost always steer minority students away from the natural sciences into "less difficult" majors that "are dead ends as far as leading to significant careers." He points out that even the relatively few minority students who plan careers in medicine or dentistry are advised to get out of the natural sciences as soon as they experience difficulty with a science or math course. "This," he continues, "is what my program is designed to combat."

Evidence indicates that Avila's program is working in this respect. Five of the students from his special program at the University of Colorado are now in medical school, three in dental school, three in nursing school; and all are doing well. At San Diego State, 15 minority students are now majoring successfully in biology. They are perhaps the best proof that EOP students, though they may be educationally disadvantaged, are not intellectually inferior. On the contrary, given the right incentives and the proper program, they can overcome scholastic shortcomings and go on in the regular curriculum.

When Avila came to San Diego State, there were no minority students majoring in biology. "Since Avila started his program here," says Gus Chavez, director of the EOP at San Diego State, "the number of minority students majoring in the natural sciences has risen from 50 to 244. There are those who would say that this dramatic increase can't necessarily be attributed to the existence of Avila's program; but I know from talking with many of the EOP students now majoring in science that a large percentage of this increase is because of the program. I tell people it's an elective that ought to be required of everyone."

> "Every university should strive to identify special professors who can effectively plan and teach natural science courses that attract minority students."
>
> *Ted F. Andrews*
> *Vice President for Academic Affairs*
> *Governors State University*

Although Avila's efforts seem so successful that other campuses might do well to emulate them, he runs the risk of not being promoted from his rank as assistant professor or granted tenure. Like other outstanding, untenured professors in American colleges today, he has been criticized—at least indirectly—for giving too much of himself to teaching. There are those who think that he devotes too much time to the program and its ancillary activities (e.g., chairing panels and speaking as a member of the board of directors for the Society for the Advancement of Chicanos and Native Americans in Science) and not enough time to research and publication in his special field of endocrinology and animal behavior. Nevertheless, his publications and research efforts are impressive compared with those of many tenured faculty.

Avila realizes that he could probably advance his own career more effectively if he were much less deeply involved in teaching, if he devoted more time to research and much less time to his students, but he says he can't do that. "It might mean that I'd get along better at the university," he concludes, "and that's a highly desirable goal. Unfortunately, though, I don't believe I'd get along very well with myself." ■

zoological gardens in St. Louis where they are introduced to a variety of species in lectures delivered by the park's staff. In addition, they observe a different species each week, and attempt to explain the animals' behavior.

Finally, they select one or more species to analyze in depth through individual projects supervised by Father Mulligan along with a teaching assistant and the curator of education at the zoo. Occasionally a student will concentrate on species of inner-city birds or on laboratory insect colonies. But most students prefer to work in the gardens; and though the zoo does not have enough duplication of species to allow students to isolate animals for experiments, Father Mulligan thinks nevertheless that, for his students, simple scientific observation is complicated enough. Using insects, birds, and mammals found locally or in the field, this approach can easily be adapted outside of a formal setting, thereby encouraging students to view the world as a laboratory.

When he first turned to the zoo as a resource, Father Mulligan was unsure of the warping effect such an environment might have on its inhabitants' behavior. Fortunately he has been largely reassured. A scholarly film produced by Rockefeller University on the behavior of patas monkeys in the wild, recently screened at Saint Louis University, confirmed patterns that students had already observed at the zoo.

Many students are inspired by the course to go on to further projects at the zoo, either as independent research or in a graduate seminar in animal behavior. One graduate of the course spent a year graphing the territoriality of each member of the zoo's prairie dog colony. Another student submitted a senior project that analyzed the behavioral results of putting apes in cages. "Psychology majors who enter the course usually come out with a broader awareness," says Father Mulligan, "and some take my graduate seminar after they begin graduate work in psychology. One or two have even switched their majors to biology."

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COURSE MANAGEMENT BY COMPUTER

by Charles J. Sugnet

South Dakota State University at Brookings is not a lavishly funded school. Struggling with a low population and too many institutions of higher education, the state is inclined to cut back on bread-and-butter items rather than appropriate development money for experiments with the latest educational technology. Yet the biology staff there, under the strong leadership of Gerald A. Myers, has successfully installed its own variation of audio-tutorial instruction and has participated in the creation of interesting new biology minicourses. Moreover, SDSU is now testing, with a modest number of students, a form of computer-managed instruction that has potential for handling large numbers of students working in a modularized program.

Through the middle sixties, SDSU's introductory courses in biological science preserved the old taxonomic basis. Students took a survey of the plant kingdom and a survey of the animal kingdom, taught by different departments, and it was questionable whether they were getting an adequate introduction to such matters as population genetics, ecology, and molecular biology. After some disagreement between the botany and zoology divisions (and this seems almost universal in the history of biology departments), an introductory biology course was established in 1965-66, under the direction of Myers. The course involved a new approach to the subject matter, but its format was the traditional two lectures and one lab each week. The following year, the course was put on television to accommodate rapidly rising enrollment, and it was a disaster. Without professional directors or cameramen, and with overworked faculty who could not afford the special effort necessary to make a good videotape, the result was a flat, static series of 45-minute lectures with poor technical quality.

At about this time, Myers heard of the audio-tutorial method being developed by Postlethwait at Purdue (see page 8), and decided to adopt it, though he knew modifications would be necessary. The first thing Myers needed was a learning center where students could observe specimens, use equipment, and listen to tapes at their own speed. He applied for and got a modest HEW grant for tape recorders and equipment, then ordered a sample carrel from a leading educational supply house. When the carrel arrived, the staff was horrified by its unit cost. Instead of ordering 40 more, they took it apart, used it as a template, and spent the summer building their own for a fraction of the retail price. The supplier was not especially pleased by this, but acceded to it when Myers placed an order for 40 tape machines. At the same time, the biology staff began making its own tapes and produced a series of large-format workbooks, which they called "Conceptopaks," for use with the tapes.

An important feature of Postlethwait's format is the small quiz section (10 students or less) in which students teach each other the week's material, using the same specimens and exhibits they used in the learning center while listening to the week's tape. Given the budgetary situation at SDSU, where there are 1,000 students enrolled in two introductory courses each semester, it was impossible to institute Purdue-size quiz sections for all students. Some biology faculty have over 20 contact hours per week as it is. Instead, they decided on small sections of about 30 students that meet once a week for an hour of lecture, discussion, and quiz. The quizzes are largely multiple choice, with an occasional short-answer essay. Such "paper" tests lack the concreteness of Postlethwait's hands-on quiz method, which makes use of the same materials the students work with in the learning center. As a result of using written quizzes, a certain percentage of students do not feel obliged to go to the learning center.

Originally the lab work was integrated into the learning center activities, as in the Purdue course. But at SDSU there were complaints from other departments over whether to continue to allow introductory biology to fulfill the lab science requirement, so Myers went back to the traditional, separate lab section. Staff and students both seem to enjoy the lab (participants looked enthusiastic, and it was not unusual to hear a student say that dissecting a fetal pig was the best part of the course). Some instructors have carried lab work off campus in interesting ways. One class cataloged land uses and drew up a land-use plan for Brookings County. Another

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copied dates from headstones in local cemeteries and made a computer analysis of them to arrive at a demographic history of the area.

For students who are particularly interested in biology or who wish to obtain extra points in the course, the learning center maintains a file of "quests." Each quest consists of a prepared student activity with exercises and a ready-made test at the end. Two sample quests: View a film showing the behavior of two similar grouse species, write descriptions of them, decide on their specific differences, and try to determine whether they interbreed; or read a *Scientific American* article describing a series of water-balance experiments on desert rats, then decide which of a list of inferences can legitimately be made from the data in the article. Myers believes strongly that lower-level students need direction, and it is characteristic of his insistence on programmed organization that even these extra-credit projects are set up in advance by the staff, available in the learning center according to a definite schedule, and evaluated by multiple-choice or short-answer tests.

Last year, the department tried a few new minicourses (developed by the Purdue/Biological Sciences Curriculum Study Group) which Keith Morrill, one of the staff members, had helped to shape. This year, the minicourses, now published by W.B. Saunders Company, with their professionally made audio tapes, are coming into use. They are a great improvement over the old home-made tapes, whose technical quality left much to be desired. The new minicourses require many more specimens and exhibits, and this has made setups for the learning center more expensive and difficult. Despite the increased headache, however, the staff agrees that the richer materials used in the carrels will make for a much better course.

The variation of Postlethwait's format as set up at SDSU, then, included audio-tutorial instruction in the learning center, a one-hour-a-week small section of 30 students, a relatively traditional lab section, and the quests for extra-credit work. This carried SDSU through the enrollment peak of the late sixties and early seventies, and it appears likely to continue as the basic format.

But Jerry Myers is not a man to stand still where technological innovations in pedagogy are concerned. With the audio-tutorial program in place, he took a sabbatical and went to Ohio State to do research in plant anatomy. Before long, however, he was working with two Ohio State staff members (Ben Mateja, director of introductory biology, and Michael Allen, research coordinator for computer-assisted instruction) to develop a transportable computer-managed instruction (CMI) model for use in biology. When he returned, he began to transport to South Dakota the system he had helped put in place at Ohio State. He convinced the administration to fund a CMI center and eventually to hire a programmer and hardware wizard to run it. Recognizing that the needs of a single department would not be an adequate reason to support such a center, he encouraged other departments such as German, geography, ROTC, and economics to make use of it also.

Students compare results of their local water studies with state standards.

The computer has a record of which modules the student has already mastered. Once the student has chosen a module, he or she may proceed to a diagnostic test on the unit. From a bank of about 4,000 multiple-choice test items Myers has compiled, the machine will randomly generate a small number of questions (15-20, depending on the module) related to the specific objectives of the particular module; a predetermined number of these pertain to each objective, depending on its importance. It is unlikely that a student will see the same questions twice even if he has to repeat the test three or four times before mastering a given module.

Using Bloom's taxonomy, Myers has determined the degree of cognitive skill each question requires; approximately 75 percent of the items on any given test are of low cognitive level, with 25 percent requiring higher skills such as synthesis and application. Many questions are, of course, routine tests of factual material, but some are very ingenious and sophisticated. Some use visual materials available at the terminal; others describe an experiment and ask the student to evaluate a series of hypotheses on the basis of the experimental data. Correct answers set off a buzzer; if a response is incorrect, the machine provides the correct one immediately. If a student achieves mastery on the first diagnostic test, he is offered the opportunity to see a list of the learning objectives in the module which he has not mastered. These are stated very specifically ("Identify the stages of mitosis in the onion root tip."), and by pushing a button the student can get a clarifying restatement of any objective he does not understand. When a module has been mastered, the student is offered the opportunity to choose another. If mastery is not achieved, the computer first displays a list of the objectives that were mastered, then shows a message advising further study and listing the objectives that still need work.

Neither the questions nor the objectives refer to particular texts or study materials, so that it is not necessary to change computer data when instruc-

Learning experience:
Introductory Biology. No prerequisites. Enrollment: 1,000.

Similar programs:
Purdue University and Ohio State University.

Contact:
Gerald A. Myers, Botany Biology Department, South Dakota State University, Brookings, South Dakota 57006, (605) 688-6141.

tional materials are changed. Especially bright students, or those with previous instruction in biology, may well master some modules without referring to the particular set of instructional materials being used at SDSU. Myers plans to have the machine produce a printed, individual study prescription every time a student fails to achieve mastery. Doing so, however, would involve limiting the program's flexibility by linking particular questions or objectives to specific pages of a text or sections of a tape.

Jerry Myers has always been interested in pedagogy, perhaps because of his background, and the idea of a computer-managed course that could eventually be extended throughout the state had a special appeal to him as a South Dakotan. After receiving his bachelor's degree in biological education from Nebraska State Teachers College in Kearney, he taught for a number of years in elementary and secondary schools in Idaho, Illinois, and Nebraska; since becoming a college teacher he has directed summer and academic-year institutes for elementary and secondary teachers.

Biology is very important to an agricultural state like South Dakota, and as a public-minded citizen (he is a regional officer of the South Dakota Lions Club and an elder of his church), Myers is interested in extending education to meet the needs of those off campus. South Dakota has a small population spread over a wide area, and due to historical accidents in the way that population distributed itself, all the institutions of higher learning are on its eastern and western edges. Some citizens in the center of the state must drive 100 miles or more to reach the nearest college. For all these reasons, the idea of a biology course that could eventually be extended by wire to terminals all over the state has a great appeal to Myers.

Moreover, as the instructional materials themselves become more and more modular, extension education becomes more feasible. Myers hopes eventually, through the combination of the minicourses and computer management, to make the whole introductory biology program modular and individualized, so that depending on the departmental or major program pursued, the student could construct his or her own course from a wide variety of minicourses.

The emphasis of CMI as it is developing at South Dakota is on management (testing, record keeping, prescription) rather than instruction. Most learning occurs off-line, either at the audio-tutorial learning center or in the weekly lab sessions. Students in both introductory biology courses attend the small weekly section meetings for lecture or discussion and a weekly quiz. But the 60 to 90 students assigned to one of the pilot sections of CMI have no weekly quiz; instead they go on their own time to the CMI center with its several Hazeltine 2000 terminals, each with a cathode ray display and a typewriter keyboard. After a tape-slide presentation on how to use the CMI center, an attendant opens a computer file that identifies each student by name, ID number, course, and section number. Only a few simple commands are necessary for access to the computer, and the attendant is always there to help. After some preliminaries, the machine displays a list of all the modules in the course. Some modules are sequenced, but the student is offered a wide choice of where to begin. Since instructional tapes are available in the learning center for only one week at a time, this freedom is at present circumscribed, but Myers hopes to remedy this in the future by having instructional materials available for several modules at a time.

A student collects data from a local cemetery for a project on population.

At regular intervals during the semester, each instructor receives a printout showing the students' progress. From it, the instructor can readily see how long it took a given student to master each module, how well the student did on items involving high cognitive skills, and what objectives the student failed to master. With all this information, an alert instructor can evaluate not only where individual students need help, but also the effectiveness of particular instructional materials. After answering each question, the student is also asked to rate, on a one-to-five scale, his or her confidence in the correctness of the answer selected. The confidence rating has great promise as a tool for evaluating questions: Those which get high ratings from students giving the correct answer and low ratings from students making errors are good measures of learning, while those showing low correlation between confidence and correctness can be eliminated as tricky questions. In addition, students can type in comments directly at any time, and while these are not relayed routinely to the instructor, they are stored on tape for future use. Myers hopes to review every item in the question bank, using the confidence rating and the student comments to weed out weak items and replace them with better ones.

There remain some practical problems. Since phone lines belonging to a local telephone company have too much interference to carry computer signals, students on CMI must go to a separate building to be tested, far from the instructor and the learning center. This separation is inconvenient at best. Another difficulty at present is that a student need only enter his code number on the terminal in order to get access to his file, and the code numbers are displayed on the wall in the CMI center. This makes it easy for a student to send someone else to pass a complicated module for him, or for a prankster to alter a student's record. With the small pilot sections, these problems are not acute, but before the entire enrollment

Evaluate the
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goes on CMI, it will be necessary to find better ways of identifying students.

The cost effectiveness of CMI has not been determined. Lee Stewart, the programmer, estimates that the cost was initially about $2.50 for every hour spent by a student at the terminal, but that this has dropped with increased use to around $1.50. These figures, however, include only computer time, terminal rental, and hookup costs. They do not include programming costs for setup and modification of the course, nor the enormous initial investment of time required. Myers did the instructor's work during sabbatical and on his own time. The costs of the programmer and the computer center are paid by the administration, so there is no charge against the department budget. No one has tried to figure these costs in dollars per student hour, but, as with all development costs, they would be substantial. And many more terminals will have to be installed before the entire enrollment of introductory biology can be accommodated. Stewart and Myers are presently debating whether it will be more efficient to buy or lease, whether portable minicomputers will soon be developed to the point of being able to handle the entire course, and other technical questions. Plans have been made for a team of educational researchers to develop an assessment program for the CMI project, including a cost-effectiveness study.

The history of change in SDSU's introductory biology program makes it appear likely that Jerry Myers will not be deterred by such practical problems. However, he makes it clear that he does not see CMI as a cost-cutting administrator's dream. One of his reasons for starting on a small scale was to avoid promising a cheap, easy way of handling large courses until he felt confident that CMI would work, technically and educationally. He believes that a form of education which demands that the student make choices about the pace and order of his or her learning will be more effective than one in which the student is merely a passive recipient of course content, and counts this to be one of the major advantages of the program with its computer-management component. He believes that machine-managed instruction offers a great opportunity to free teachers for "the soft humanizing function" of "stimulating interpersonal communications."

If the machine does free teachers from grading and record keeping, it will have done a great service. But administrators will undoubtedly be tempted to absorb the resulting free time by adding more sections to the teaching load and reducing overall staff size, rather than devoting it to "soft humanizing functions." Even if they don't succumb to that temptation, instructors will have to learn how to make and maintain personal contact with students on CMI. SDSU has an advantage over many large biology programs in this respect, since the majority of its staff is not composed of first- and second-year graduate students but of permanent faculty. This provides experience and continuity, so that the staff can benefit cumulatively from the experiment, though their heavy teaching loads may make it difficult.

There remain other pedagogical questions as well. The mode of testing has an enormous influence on other aspects of any course; as Postlethwait puts it, in explaining why he insisted on small oral quiz sections at Purdue in spite of the cost: "The style of testing tends to dictate the way students study and learn." Since CMI works almost entirely by multiple-choice testing, it may be that in spite of the sophistication of the questions, students are being taught that learning is a matter of preparing for tests, and that knowledge is a static, simple, univocal body of right answers.

The entire course (with the exception of the labs, where some open-ended inquiry takes place) has a tendency to be hermetically sealed—it doesn't point the student outside its own programmed limits. A student can decide which module to be tested on first, or can select a particular quest, but doesn't have opportunities to initiate new lines of inquiry, to express himself in his own language, or to decide which areas of inquiry seem important and interesting—all of which are necessary skills for the practicing scientist. It is important to note, however, that the same criticism could be made of many noncomputerized courses and the department does offer opportunities for inquiry in advanced courses.

Myers has not yet done any comparative evaluations to determine differences in attitude or actual learning between students in the pilot CMI sections and those taking the course in the normal manner, but he has conducted an attitude survey of students on CMI. The survey asks the hard questions about CMI and finds that there is very little resistance among the students to machine instruction per se. Most students report that they did not feel bored, or isolated, or tense while working with the computer. The only questions which drew disturbing responses with any consistency were "I found myself just trying to get through the material rather than trying to learn," which many students reported was true most or all of the time, and "As a result of CMI study, I am interested in trying to find out more about the subject matter," which drew many responses of "Uncertain," or "Disagree." Of course, any introductory course will have some students who are just trying to get through and do not find the subject interesting. But these responses suggest that computer testing may turn the learning experience into a sort of obstacle course for many.

It will not be possible to draw more definite conclusions until a larger number of students has taken introductory biology on CMI. One thing, however, is relatively certain: Myers will implement a fully computer-managed program faster and for less money than anyone now thinks possible. As he drove me to the Sioux Falls airport across 60 miles of South Dakota prairie on the first warm, sunny day of spring, I asked him my last prepared question: "If there were no budgetary restrictions, what introductory biology course would you create? What is your ideal course?" The prairie still rolls beautifully, even though it has all been plowed. As we whizzed over the bare but soon to be planted land along Interstate 29, he described his ideal course: "Five hundred learning modules on CMI with visual loops so questions can include diagrams or films, available to anyone in the state, at home, through a computer terminal adapted to home television sets. Also complete course content on videotape for transmission to any home in the state." ■

> "The computer is an exceptionally effective tool for managing instructional materials or assisting with instructional processes. Biologists would be well advised to experiment with the use of computers in instruction."
>
> *Ted F. Andrews*
> *Vice President for Academic Affairs*
> *Governors State University*

A Culturally Relevant Curriculum

On the beach at Lummi Island, one of the smaller islands of the San Juan Archipelago situated off the northern coast of Washington State, stand a cluster of five unimposing buildings that hold great hope for American Indians of the nearby Lummi Reservation and those as far away as Maine. Once a marina, the small complex now houses the Lummi Indian School of Aquaculture (LISA), a practically oriented institution now in its third year of offering education and training in aquaculture and aquatic sciences to Indians of all tribal affiliations.

While seeking the status of a community college itself, LISA is presently accredited through nearby Whatcom Community College for the granting of a one-year certificate as well as a two-year Associate of Arts degree. Credits earned at LISA are transferable to other two- and four-year colleges in the state. Enrollment is open to all students over the age of 18 who are of at least 25 percent Indian ethnicity.

The overriding purpose of the Lummi school is to increase the employment potential of its students through training in such vital and marketable skills as aquaculture and fisheries management. Over 100 students representing more than 25 tribes from all over the country have already been trained in these and other skills connected with aquatic life sciences. Additionally, the school hopes through its training of tribal members to encourage the economic development of aquatic resources found on Indian reservations. Fish and shellfish hatcheries, spawning channels, and other commercially viable aquacultural projects can do much, the school believes, to relieve the conditions of poverty and unemployment so commonly found on reservations throughout the United States.

Each morning that school is in session, LISA's 50 to 60 students are picked up by van at their rented apartments on the mainland, and either ferried to Lummi Island or transported to any of several nearby vocational training facilities, such as the Lummi oyster hatchery or fish farm. The main campus on Lummi

Man, Nature, and Society: The Study of Bioethics

In 1970, E. Peter Volpe of Tulane University developed a course called Man, Nature, and Society. Intended for the beginning, liberal-arts-oriented student, Volpe's year-long course is designed to demonstrate that an understanding of biology can be pertinent to all of us, that new biological discoveries continually impinge on the value judgments we must all make about our lives, and that a study of the sciences can serve as a forum for discussion of the moral questions that arise.

Specifically, the course offers students the information necessary to understand such societal issues as abortion, aggression, birth control, euthanasia, malnutrition, overpopulation, and pollution. The course requires students to apply this knowledge to an intelligent interpretation of the issues. Even more broadly, however, Volpe intends his course to provide a sense of the fervor of scientific inquiry and an insight into the methods by which man observes phenomena, and then forms and communicates ideas about them. Volpe wants students to understand how scientific investigations are conducted and to appreciate both the discipline and the intellectual effort behind distinguished biological research.

The course dispenses with traditional surveys of anatomy and physiology and becomes instead an introductory bioethics course similar to others being offered with growing frequency to nonscience majors around the country. Readings and lectures concentrate almost exclusively on the biology of man and how it affects his life, values, and culture. The material requires two semesters to complete, and students are free to take either, neither, or both. During the first semester, students study Man and His Development, beginning with sexual reproduction and going on to human developmental processes. Next they study Man and His Inheritance, in which they explore genetic concepts. During the second semester, students begin with Principles of Evolution and then consider Population Dynamics, probing how man interacts with his environment.

Each section of study leads to the consideration of different ethical or social problems. For instance, one issue currently facing the scientific community is the potential for test-tube fertilization. Scientists have produced fully developed rabbit and mouse embryos from artificial, *in vitro* fertilization. They have similarly grown human embryos to the blastocyst stage during which the egg customarily implants itself in the uterine wall. It is reasonably certain that such an artificially fertilized egg could be reintroduced into a human uterus where it would implant and grow successfully to maturity. The question is: Should scientists attempt it?

Such meddling in nature's way troubles many people theologically and also poses a clear potential for abnormal fetal development. And there is an additional danger of confusing the eggs and sperm of several donors and mismatching either husbands and wives or mothers and children.

Volpe offers no solution to this dilemma, nor, he says, is there time in the course to probe methods of arriving at resolutions. A scientist's duty, he asserts, is to lay out the issues and avoid all personal biases—or at least acknowledge those that appear. Afterward, it is the duty of each of us to come to individual

Island houses classrooms, laboratories, a seawater system, and library, and it is here that students receive their primary education in basic biology, ichthyology, limnology, parasitology, aquacultural science and management, and related subjects.

Approximately half of the students' time, however, is spent on field trips and on-the-job training, utilizing LISA's own research vessel and specialized laboratories as well as aquacultural facilities in commercial operation on the Lummi Reservation on the mainland. Curricular interest is enhanced by the opportunity to undertake individual research projects during the second year, generally dealing with the growth of aquatic organisms. Students are encouraged to take responsibility not merely for their own research but also for the well-being of the aquatic organisms under their care.

In order to round out its curriculum and at the same time deal with the common problem of inadequate preparation of entering students, LISA requires that all students take a program of liberal arts courses at Whatcom Community College, including anthropology, economics, speech, and remedial reading.

Responses of students to the LISA program have been very favorable, and school officials believe that such responses are due in large measure to the provision of a culturally relevant curriculum within an academically supportive and relaxed atmosphere. Small class size, high teacher-student ratio, and the provision of special services such as tutoring and remedial programs are also credited with generating student enthusiasm.

One clear indication of LISA's success in its endeavor is that 80 percent of the entering students do complete their training satisfactorily. And 70 percent of LISA's graduates have been placed in relevant employment, many of them returning to their own reservations to initiate or operate commercial aquacultural projects—which is what the Lummi Indian School of Aquaculture is all about. **For more information: Paul Winkler, Director, Lummi Indian School of Aquaculture, P.O. Box 11, Lummi Island, WA 98262, (206) 758-2368.**

moral judgments and to help society resolve such issues. But such action is not the province of Volpe's course. Rather, students are led to the point of decision making without being forced to reach conclusions. They are given the best available scientific evidence, the possible alternatives, and the ethical questions involved. Their decisions, and how they reach them, are personal.

Finally, Volpe's course raises questions that, upon investigation, turn out not to be problems at all. Cloning, for instance, attracts a great deal of student interest. It is the procedure by which scientists have replaced the nucleus of an unfertilized frog egg with a nucleus taken from a developing frog embryo. When all goes well, the final, fully developed frogs are carbon copies of each other. The media have forecast a variety of potentials for this process, Volpe suggests, and have implied that someday we will be able to duplicate ourselves simply by replacing the nucleus of an unfertilized human egg with the nucleus of one of our body cells. But this, Volpe observes, is a distortion of our current state of scientific knowledge.

First of all, cloning has been accomplished successfully only with frog eggs—which are approximately 12 times the size of human eggs. Second, there have been many instances of gross abnormalities in fully developed cloned frogs. Before we experiment with human cloning, scientists caution, we must decide what we will do with our mishaps. And finally, cloning only works with the exchange of embryonic cell nuclei. In other words, the decision to clone must be made before the organism to be duplicated is born. How can we foretell whom we will want to duplicate before he or she has functioned in society? So far, no scientist has shown the slightest interest in pursuing these experiments because of the awesome potential for wholesale debacle. As a practical ethical issue, the problem, therefore, doesn't really exist.

The course is taught by lecture three hours each week; there is no laboratory work. The reading assigned comes from a text by Volpe called, appropriately, *Man, Nature and Society* (William C. Brown, 1975). The text (which, Volpe reports, is also in use on other campuses) is the result of Volpe's experiences teaching the course and thus is a reflection of his programmed instruction; with few exceptions the chapters are simply assigned in order. Enrollment ranges from 80 to 125 per semester. There are four exams scheduled during each semester, and in the fall, when enrollment is lower, Volpe also assigns a term paper. Suggested topics include the effects of radiation on a fetus, a study of a disease with a known genetic basis (such as phenylketonuria, sickle cell anemia, thalassemia, or cystic fibrosis), the process of aging, or the study of a genetic trait that can be traced through a student's family.

Several biology majors take the course each year, but it is specifically intended for (and primarily attracts) freshmen who will never take another science course. Yet in the spirit of genuine general education, Man, Nature, and Society produces informed citizens who have acquired the scientific knowledge necessary to understand and deal effectively with a wide variety of urgent social issues. **For more information: E. Peter Volpe, Department of Biology, Tulane University, New Orleans, LA 70118, (504) 865-4011.**

Building Blocks for Biotechnology

People are different. Even students and teachers. Who more than biologists ought to be informed and guided by that truth? And yet, until recently, little has been done to fashion biological teaching methods and materials in accordance with that principle.

The rigidities that have characterized the concepts and techniques in the teaching-learning process are being broken down in part by BIOTECH, a system that takes into account the breadth and diversity of skills needed in biotechnology and the attendant impossibility of building tidy curricula to meet each and every need. The BIOTECH answer is to develop and distribute teaching-learning materials that are easy-to-handle blocks to be inserted as needed anywhere in the biology curricula. The blocks are modules, small units of learning, each with a single and often modest instructional objective. The module is a self-contained, audio-visual package of programmed instruction, serving as a guide—as patient as it is repeatable—to the completion of a specific task at a predetermined level of competency in a short period of time.

The quality of the BIOTECH methodology and product is dependent on the development approach taken by the American Institute of Biological Sciences (AIBS) in Arlington, Virginia. AIBS farmed the job out to the most promising people in the field—people who could think small but creatively. (The cost problem was answered by the National Science Foundation (NSF), which has funded the project since 1971.) With guidance from a national advisory committee of leading researchers, teachers, and communicators, the work of the field biologists was polished and refined by a staff led by Richard A. Dodge, who had left his faculty post at experimental Columbia Junior College in California to join AIBS.

Project BIOTECH was intended to fill what AIBS regarded as a critical need for supplementary skill-training materials for so-called middle manpower needs in the life sciences. The need was discerned as long ago as 1959 when the Society of Industrial Microbiology conducted a symposium on training for careers in microbiology. A number of follow-up conferences on training biotechnicians led in 1970 to the birth of BIOTECH in the AIBS Office of Biological Education.

Today, says Dodge, there are about 7,000 adoptions of BIOTECH modules in more than 1,000 settings, mostly academic, throughout the country. Field testing and evaluation at the institutional level, collected and further analyzed at the Human Factors Research Laboratory, Colorado State University, suggest wide acceptance of the project as well as verification of the claims for modular learning pedagogies and techniques in biology.

A forerunner of the modular method in biology instruction was the heralded audio-tutorial, self-paced minicourse project of Sam Postlethwait at Purdue. According to Elwood Ehrle, dean of arts and sciences at Mankato State University, the BIOTECH modules "may very well so effectively complement those of Postlethwait's group as to bring about a long-awaited revolution in biological education."

The BIOTECH share of the impending revolution is packaged in 150 titles—from "How to Make Serial Dilutions" to "How to Make a Manual Determination of Hemoglobin by the Cyanmethemoglobin Method"—under five series topics: General Skills, Animal Handling Skills, Environmental Skills, Field and Museum Skills, and Allied Health Skills. Each program includes a set of slides or a film strip in color, a compact cassette for coordinated sound, and a study guide. The module focuses on a single, well-defined task. The BIOTECH concept of a task is "the simplest unit of activity which has as its product a precise, marketable skill."

As Dick Dodge describes it, "Each module is designed to stand alone and each will be available to the user as an independent, teachable block which may be incorporated into an instructional program when and where it is needed. A module may be inserted into an existing course as an adjunct or supplement to the traditional laboratory, or appropriate modules may be arranged into designed sequences to meet the needs of a given curriculum. These needs may include qualifying a student for particular employment opportunities, learning particular biological skills in undergraduate and graduate laboratories, or for on-the-job training in industry and government."

Wisely and realistically, Dodge and his colleagues acknowledge that the modules should not be seen as teacher substitutes. They are intended, rather, to free the teacher from the more routine, mechanical tasks associated with operational, manipulative teaching. "They will permit the teacher to concentrate on what a teacher should do best," says the project director, and that is "affecting the motivational, attitudinal aspects of learning." At Columbia Junior College, Dodge got to know his students much better once biology instruction was modularized, and he's hopeful that other user-teachers are reaping at least this benefit from the experience.

Now that the NSF-supported development/experimentation stage of the project is coming to a close, can BIOTECH be sustained as a self-supporting endeavor? Dodge is pessimistic. The institute alone could not carry on its role in cooperation with a corporate producer (the modules are manufactured by Communication Skills Corporation of Fairfield, Connecticut), and market the materials at anything like the reasonable price tag that now prevails. Most programs now sell for $40 each. A few are packaged in series—a recent development, Hematology Lab Techniques, being an example—for correspondingly higher prices. But if BIOTECH makes its mark, as early soundings indicate it should, the market will be there. And firms like Communication Skills may find the field profitable, even if prices rise as the field work and refining process come at a higher cost.

For more information: Richard A. Dodge, American Institute of Biological Sciences, 1401 Wilson Boulevard, Arlington, VA, (703) 527-6776.

BIBLIOGRAPHY ON TEACHING

Cited below are 10 works judged by the Teaching Project Director and the Advisory Committee to be essential reading for all who are concerned about improving the quality of teaching. The books, articles, and pamphlets listed here were selected from an extensive annotated bibliography on college and university teaching which includes over 250 entries. The complete bibliography is available as part of *Change*'s Undergraduate Teaching Project. Requests should be addressed to "Teaching Bibliography," *Change* Magazine, NBW Tower, New Rochelle, NY 10801. Please include 50 cents per copy requested to defray the costs of postage and handling.

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Final report of the Project to Improve College Teaching sponsored by the American Association of University Professors and the Association of American Colleges from 1969 to 1971. The findings of several commissions and conferences are presented, as well as the author's observations of teaching in many college classrooms. Teaching is described as conventional, predictable, and uniform. Among the recommendations are systematic yet informal inservice staff development programs, deliberate preparation of graduate students for teaching, recognition of excellent teaching through reward systems, and better learning environments.

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Analyzes current approaches to instructional improvement and the ideas behind them. Shows how conditions such as "tenured-in" faculties, a tight job market, educational technology, nontraditional programs, and new students lead to more emphasis on teaching and less on upgrading academic specialties. Workshops, seminars, and other programs are described that help faculty acquire knowledge, skills, sensitivities, new attitudes, and alternative teaching methods. The author examines ways of organizing programs directed by administrators, faculty committees, and/or consultants and shows the advantages of a "separate instructional improvement center." Program directors are surveyed for strategies to induce faculty participation and to assure administrative support. Gives prospects for the future.

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ENGLISH

BETWEEN WAS AND WILL BE: ENGLISH

by Elizabeth Wooten Cowan

The problems connected with teaching undergraduate English can be divided into two categories: how to teach the skills of literacy, particularly writing; and how to continue to teach the literature courses that are the discipline's stock-in-trade. It is a case of too much and too little. For a discipline that has always loved to deal in paradoxes, tensions, and ironies, it may be a case of life imitating art.

There is, for one, the "too much" of the basic courses in writing. These were in the past at the bottom of the department hierarchy, done grudgingly and with menial help, and thought to require nothing more than a degree in literature to be taught successfully. Such courses, however, are now seen in a different light as a result both of criticism from the public and the economic demands of departmental survival. The trend in school after school, including many of the prestigious Ivy League universities, is for those who haven't taught freshman courses in years to teach them now—otherwise, there simply would not be enough courses to make a load. To come to a course as difficult as the teaching of writing out of expedience rather than genuine interest is an obstacle to be overcome at the outset.

The situation is complicated by the students themselves. In most cases unable to write anywhere near the standards set for them, they horrify their teachers. The situation often becomes one of confrontation leading to stalemate: The teachers make demands; the students won't produce. Moreover, because most teachers of college writing are forced to train themselves on the job, to supply their own graduate education in rhetoric, language study, and even in effective teaching methods, the course textbook bears an especially heavy load in the teaching of the class. A trial-and-error approach in selection of texts—with the teachers always dreaming that tomorrow the definitive textbook will appear—encourages book publishers to produce writing texts in astounding numbers. (At a recent convention of college writing teachers I overheard an editor asking very seriously, "Have you seen anybody who wants to write a book?") Such proliferation naturally results in more heat than light, a condition not entirely helpful to the teacher of literature turned teacher of writing who is totally befuddled by the competing approaches—rhetorical, humanistic, linguistic, word to sentence to paragraph, paragraph to sentence to word, personal awareness, prescriptive, descriptive, model, deep structures, patterns, ad infinitum. With little unifying theory among them, members of the profession argue the effectiveness of a personally espoused method to unconvinced others. If one maintains, for instance, that success lies in traditional methods and content, another recalls that the most widely used textbooks of the past 25 years were just that—and test scores still fell. The search goes on.

Further complicating the college English teacher's role as a teacher of writing is the double message inherent in the values upheld by the profession. On the one hand, the road to status and security lies in the publishing of literary research. On the other, more and

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more time and energy must be spent in the teaching of writing and reading, tasks for the most part more required than rewarded by the profession. The values and expectations set by graduate training in English have never been more in conflict with the realities of daily life in college English departments. Little wonder, then, that this disparity results in frustration and sometimes anger.

While college English professors strain to find competence in the teaching of an aspect of the discipline they didn't choose for themselves, they are faced at the same time with too little demand for what they did in fact train themselves to do. Undergraduate English majors continue to decline. (A recent national survey of freshmen indicated that only 1.8 percent were interested in pursuing a major in English.) Those who continue to study literature are, for the most part, doing it on their own terms. Refusing to sign up for traditional survey courses, period specializations, and historical approaches, the nonmajors (now a majority in upper-level undergraduate English courses) are choosing instead areas of study by and large considered peripheral to the "great tradition"—science fiction, psychology and literature, film, fantasy, children's literature, modern writers, ethnic studies, advanced rhetoric. Faced with a buyer's market, faculties offer these courses, often hoping, however, that they are just biding time until the cycle returns to a central core of studies.

There's hardly a place to rest. If college English teachers aren't agonizing over how to find an effective way to teach a subject they never planned to teach, they are searching for ways to present their own specialty so that students will take the courses they do want to teach. There are signs, though, that this uneasiness is producing beneficial results. The study and support of rhetoric are increasing at a most encouraging rate. The profession's recognition of the importance of teaching is evidenced by the fact that the enrollment in the four teaching divisions of the Modern Language Association (MLA) has put them in the top 20 of 70 available divisions. The presence of nearly 400 special sessions at the MLA's 1975 convention likewise attests to the experimentation and variation now found in the study of literature. Professors seem to be exploring a middle ground between weak popularization and sound democratization. The English profession, if perhaps more slowly than many would like, seems to be getting the point. □

For those interested in a broader view of improvements in undergraduate English teaching, a list is available of more than 20 additional learning experiences submitted to the Modern Language Association. Included is a brief abstract of each course and the name, institution, and phone number of the person to contact for further information. Please send a stamped, self-addressed envelope to: Teaching Improvements in English, *Change* Magazine, NBW Tower, New Rochelle, NY 10801.

COOPERATIVE LEARNING IN A WRITING COMMUNITY

by Ronnie Dugger

As with many original teaching reforms, the idea for the Brooklyn College writing center grew out of a teacher's close observations of his students' behavior. In 1970, Kenneth Bruffee was teaching English to the first open-admissions students enrolled at Brooklyn College of the City University of New York. He noticed that they learned to write better if they were helping each other than if they worked singly or in contact only with the teacher. Moreover, students were not making use of professional tutorial services offered free of charge by the university. Students were already getting credit for peer-group counseling in such areas as drug problems and food coops; Bruffee saw no reason why they should not also be awarded credit for improving each other's writing skills. He conceived of the writing center as a storefront operation, a place where any of Brooklyn College's 35,000 students could drop in for help anonymously without fear of being graded or judged. With the blessing of the college's president, John Kneller, and the English department chairman, he plunged ahead. "It was," Bruffee says, "a tremendous opportunity to be able to do something I wanted to do." Although the program was intended to support open admissions, he regarded it as one antidote to the severe overall writing difficulties at the college.

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Peer tutoring is the name of the program, and collaborative learning is the theory behind it. A premise of the program is that students have trouble writing because "they're writing in a situation in which they're always subordinate to the teacher—they're always writing up," as Bruffee says. Collaborative learning seeks to replace "top-down" education by changing what Bruffee sees as its power relationships.

Tutoring, he says, can be authoritarian, merely facilitative, or truly collaborative. In the last case not only the student receiving help but also the tutor learns. In the peer tutoring at the center two undergraduates are brought together, "neither of them expert in what they're doing, though perhaps one a little more so, and one tutors the other." In theory the student being tutored "can learn some things that he was unable to learn, or at least hadn't learned, in the traditional situation because the pressure is off. He's not being watched with reference to grades; the person he's talking to is another student.... They really are peers." And the tutors "will learn to write better by trying to teach someone else how to write. Just by being aware, their standards go up" in accordance with what Bruffee calls "the old teaching principle, 'I never knew the subject until I had to teach it.'"

The preparation of the tutors, however, is not left to chance. Rather, while they are engaged in tutoring at the writing center, they must also take a three-credit course in intermediate composition designed to improve both their writing and tutoring skills. The first semester, Bruffee made up the course from scratch. The initial chaos, he says, was the result of his not knowing how to teach tutoring and writing in the same course. Although writing is now emphasized in the first and tutoring in the second half of the course, complaints have persisted. Marcia Silver, an instructor who teaches the course, says her students felt shortchanged on their own writing, and she is now trying to alternate the focus from one class to the next.

In selecting tutors, "we look for students who have shown themselves to be especially capable of working well with their fellow students," Bruffee says. "A few are not very good writers," he concedes. "We don't insist they have good grades. All they have to do is pass freshman English with a C. The idea is that if they're interested in writing, they can be helpful—even more helpful than the student who has it down pat—he doesn't know how that kid who can't write is feeling." Why not, though, require that the tutors achieve, say, an A in freshman English? Because, he retorts, the center is about writing paralysis, and a

tutor who feels such paralysis can identify with the person who needs help, and secondly, because "some of the kids that come in with A's tend to be quite cocky. They're impatient with failure."

The tutors are nominated for the peer-tutoring course and the writing center by freshman English teachers, who traditionally know their students better than any other teachers in a college. But recently, the idea has developed that the tutors should be better writers. "We want the best we can get," says Leo Zanderer, director of the center. "A good B is better than a good C." As a result, the center began specifying that although C students with exceptional empathy could be recommended, on the whole potential tutors should have passed freshman English with a B or better.

About 2,500 tutoring sessions occur each year at the writing center, which occupies half of a yellow, barracks-type tin shack near the college gate. Its location across from the college library on a path most students travel each day has been carefully chosen. Inside, the space is divided into half a dozen work areas by eye-level dividers. There is some comfortable furniture in one of the areas, and this, along with an informal, amiable atmosphere, has given rise to some criticism by faculty and students that the center is "a country club."

But inside Betty Wells very patiently works with a young woman who is trying to summarize some articles for a paper. Karen Heller discusses how one student followed her instructions, how another's paper could get only so good, no better. Frank McGann, a tutor with a reputation for bluntness, says that sometimes the center seems like "a noble attempt," other times like "a great failure." Many students who seek help are so poorly prepared, he says, that the tutor behaves basically like a teacher, not a peer: some of the work is teaching blacks and Puerto Ricans a new dialect, standard English. Staff member Bruce Chadwick helps a girl analyze a philosophy text. Then he and a tutor help a Chinese student (who speaks little English) work on a paper, eventually referring him to another office for a test in English comprehension.

At least one of the six to nine staff members associated with the center is present at all times, and, says Bruffee, "the tutors are taught that when they get stuck they should go and get help. They're taught it's not a humiliation not to know an answer. When they go for help, already they've shown the kid they are working with how to learn."

George Bing

A peer-tutoring session at Brooklyn College's writing center.

Some students are referred to the center by their teachers, but others come voluntarily because they have heard about the center or seen its flyers or ads in the student paper. One problem is that students and faculty alike sometimes expect either quick results or detailed remedial help, while Zanderer says the center is committed to the idea that learning to write is "a slow process." The tutors agonize together over when to give information and when not to and they try to emphasize broad concepts. Professors who worry about authenticity, plagiarism, and grades sometimes fear that a tutored student's paper is not his or her own work. Zanderer insists that the tutors are told not to be conned into doing other people's work for them.

Some faculty fear that the collaborative concept steals their students away and directs them into a relationship with other students that is not fruitful enough. But Zanderer believes one purpose of the center is to help the tutors temper their idealism and deal with defeat by realizing: "'There are some students I can't help.' Failure has to be a part of our experience."

There is no red tape for the student seeking help, but tutors are asked to write in a log the course in connection with which each student is seeking help, an account of the problem, and what was done. A file of these logs goes back to 1973. Most of the entries report work done on organization, grammar, and supporting arguments. Here are a few entries:

Grammar, translation—repeat student. Problems with verb confusion between masculine and feminine, plural and singular.

I helped a student plan an outline discussing her job as a secretary.

Helped analyze a poem about love and dirty laundry. H[illegible]be back.

Helped a student rearrange and clarify a very well-written, well-researched paper on Antigone and A Doll's House. She had been upset because her prof had yelled at her.

Please note the following comments made by the instructor [on a paper]: "If I was in English, I'd quit!" and "Your writing is atrocious, too damn wordy, and the essay doesn't make sense."

Eng 71 seminar student in Shakespeare required help in writing a sonnet in terms of meter, rhyme.

and the accenting of words for a poem. We discussed the basic structure of a sonnet.

I worked with a young man today who told me that his teacher asked him to drop English 1.2 because he was doing poorly and would have failed. After looking over his shoulder while he was writing, I panicked because of all the errors I saw. ... My fear disappeared when we went over the paper with him and he corrected most of his own errors.

The course in intermediate composition that trains the tutors is in many ways as flexible as the center, yet nevertheless it has a definite format. At the first meeting, students discuss why they are there and are given an idea of what will follow. Each is required to begin a log on class discussion, writing, and tutoring; during the semester they will occasionally be asked to read aloud from these logs, and twice every semester the teacher will comment on them.

This year's course instructor, Marcia Silver, taught English in the New York City high schools for four years, struggling with paperwork and disruptive behavior. She began teaching at Brooklyn College in 1970 when open admissions brought in a wave of new teachers.

One of the stock exercises used is evaluation of "the reality paper," a poorly written essay by a Brooklyn College student on God, reality, and resignation. The tutors' gut response is to the bad grammar, but Bruffee's idea is to have them see through the writing to the student's meaning. The mechanics, he feels, can come later.

In Silver's class the students arranged themselves in clusters of three or four with Silver seated alone—an informal semicircle. Frequently other faculty members sit in; in this case Zanderer, and Bob Nelson, who will teach the course next year, joined different groups. Silver maintained a certain distance throughout the hour—setting the scene, giving some instructions, then mostly asking and listening. She asked each group to read the reality essay and write down their evaluations of it. Students asked, "How do these people get through high school?" and remarked that the writer's problem was he wrote the way he spoke. In my group the students tried to agree on one statement of the writer's meaning. Laughter and gossip prevailed in another group until one of the students asked what they were going to tell Silver when she asked about the paper. At one point in the open discussion there was real confusion over whether the paper might be a first-class piece of work. Students agreed that it sounded more coherent when it was read aloud. Responsive to Silver's cue, they debated whether there was some kind of transition between the paper's first and second paragraphs, and finally agreed there was. They decided that as tutors they had to think of three positive things about the paper before starting to criticize it, and by asking, "What would be the first thing you would say to the writer?" Silver elicited: "a good start," "some good ideas," "a very decent job in the time you had."

Around the third week as students begin to tutor, they start to do exercises from Bruffee's book based on collaborative learning, *A Short Course in Writing*, and into what are called peer critiques. These are a series of increasingly complex analyses devised by Bruffee. Each student is required to write four papers (on which he or she is encouraged to consult with a staff member at the center), plus four critiques of fellow students' papers. "The system works this way," Bruffee explains. "The tutors first read their work aloud in class. Then the teacher staples to the front of every paper two blank peer-critique sheets. The tutors exchange papers, write a critique, exchange papers again, write a second critique, and finally turn the material in to the teacher. The whole sequence takes about a week. The teacher then reads and evaluates the remarks of a jury of two peers as well as the paper itself."

The first critique asks only for an objective description of the work. The second asks for this again, along with a detailed evaluation of the paper's unity, development, articulation, clarity, and mechanics. The critiques of the third and fourth papers, which concern tutoring and the writing center, leave the students more freedom in responding and the authors reply to these critiques.

Perusing papers with accompanying critiques, one sees impressive give-and-take among the students and the teacher. Nicholas Villamagna wrote a paper concluding that students learn more about writing in a standard classroom situation than in peer tutoring. Though disagreeing with some of his views, Silver gave him an A; student critics, however, while acknowledging the paper as excellent, rebuked him for intolerance. They suggested that he might not appreciate peer tutoring because, being a good student himself, he wasn't able to understand a fear of teachers. The papers offer convincing evidence that Bruffee's peer-critique system is of interest and value.

Silver has had students rewrite papers five or even six times. They often interpret this as a sign of failure, but she believes that most learning about writing happens in the revising.

At first they are "very nervous about sitting down with other students' work," fearing they will confuse the students they are tutoring, mess up someone's life, Silver says. "The subject of grammar comes up every single semester.... They're worried about it." Last semester she gave them "a grammar clinic" for one day, although she knew she could not cover the subject in such a short period of time. The staff thinks that a crash course wouldn't work, still, as

George Bing

Informal meetings among staff members and peer tutors occur frequently.

Zanderer says, "We feel a great deal of guilt about it." They have considered asking the English department to give the tutors special instruction in the subject.

Around the seventh class meeting, the students are given some basic rules for tutoring: Don't edit or rewrite, do rap, find the problem, read the paper over, talk it out. They discuss how to analyze papers, how to organize them, what makes a paper confusing. At the ninth meeting they discuss how they have felt tutoring. By this time the class has become a symposium on writing, tutoring problems, and collaborative learning.

Along with Bruffee's text—which contains his program for learning how to write, a basic form for short essays, writing exercises, examples of writing, and notes for teachers—some of the tutors read Abercrombie's *The Anatomy of Judgment*, dealing with factors that influence the making of decisions. They are also expected to consult a handbook such as Strunk and White's *The Elements of Style* or Sheridan Baker's *The Practical Stylist*. Course resources include a collection of news articles about other kinds of collaborative learning and work, and a collection of papers on tutoring written by students in previous classes.

When Bruffee was teaching the course, he would adopt a stern manner and issue exact instructions for the first writing assignment; then he would ask students how they felt. They acknowledged fright. "That's what the writing center is for," he would tell them, "to relax the kids who feel the way you feel." Or he would walk in on the students when they were talking and laughing and after about 10 minutes more of it remind them how relaxed the class was. "It's a process of consciousness raising about the nature of education."

Bruffee, who has taught English at Brooklyn College for the last 10 years, is an advocate of nonauthoritarian learning. He sees peer tutoring as a program to bring forward the fact that "learning is a social process, not something you do off in a cellar somewhere—that knowledge is a social phenomenon, not something in a book."

Enrollment in the course has ranged from 10 to 20 students, depending somewhat on how assiduously the tutors are recruited. Some drop out early, but once the semester is completed, about half continue tutoring at the center. For those who want to take advantage of it, a more rigorous second-semester writing course has just been added.

Even some more conservative, traditional members of the English department have begun to give the peer-tutoring program tacit approval. One professor recently told Bruffee that he had begun sending students to the center and was "surprised that they hadn't been tampered with." In fact, he conceded, they even "came back showing some signs of actually writing better." Silver believes resistance to peer tutoring comes from attitudes toward open admissions and the fact that the course doesn't look academically valid. "There are certain members of our department," she says, "who really think certain students shouldn't be here and that those of us who work principally with them are tainted.

"I find it hard to explain what we're doing in legitimate academic terms that would be accepted by other people on an academic level," she continues, "but everybody has developed in some way.... People move off their fixed positions, begin really listening to other students, solving real writing problems." She is pessimistic about the future of open admissions because of renewed standards of academic stringency and budgetary cuts, but thinks "it would have worked if there was enough money and the high schools were doing a better job." She believes that for the course to be as effective as possible it should last an entire academic year.

> **"I am impressed by the attempt to build on the elementary recognitions that one can learn by teaching, that students can profitably be engaged in appropriate teaching-learning situations, and that collaborative learning is a worthy aim."**
>
> *Kenneth E. Eble*
> *Department of English*
> *University of Utah*

Learning experience:
Intermediate Composition—Peer Tutoring Section. Prerequisite: Freshman Composition. Enrollment: 20.

Other descriptions:
"Collaborative Learning: Some Practical Models," *College English*, February, 1973; reprinted in *Ideas for English 101: Teaching Writing in College*. Urbana, Illinois: National Council of Teachers of English, 1975.
"A New Emphasis in College Teaching: The Contexts of Learning," *Peabody Journal of Education*, October 1972.
A Short Course in Writing. Cambridge: Winthrop, 1972.

Similar programs:
Queens College of the City University of New York and Nassau Community College, Garden City, New York.

Contact:
Kenneth A. Bruffee, English Department, Brooklyn College, Brooklyn, New York 11210, (212) 780-5195.

Evaluating the work of the center is difficult because of the lack of records, the policy against evaluating those who seek help, and the discontinuity of the peer relationships. Bruffee cites as an advantage the course's proven transferability: Queens College of the City University of New York has modeled a program on Bruffee's, and Nassau Community College introduced a peer-tutoring course in the spring. In one attempt to develop some feedback, tutors are visiting freshman English classes to advertise the writing center. They plan to revisit the same classes later with a questionnaire asking who went to the center and what kind of experiences they had. Bob Nelson says there's been a lot of negative talk about the center because people "don't realize it's a process that takes time."

Zanderer speaks enthusiastically of "the excitement of the place—I think of the cliché 'democracy in action'—the mutuality of developing values in writing and thought. There's an open exchange here; the concept of competition among the tutors is somehow muted and cooperation becomes the thing. There's kind of a gestalt. The faculty become less the enemy—people to work with rather than to work against."

"It's not a panacea, God knows," Ken Bruffee says, but "it offers something to some students who can learn in no other way and some who might be able to learn in other ways but can learn well and faster this way." He would not say every college or university needs a peer-tutoring writing center, but he does say, "I think that every educational institution in the country needs an element like this for writing or anything else. There's no reason kids can't tutor each other in math." ■

TOTAL IMMERSION IN LITERATURE

by Henry Weil

There are days when students taking the Literature Semester at the University of Iowa in Iowa City feel as if they are drowning in a sea of words. For 16 weeks they study literature—reading it, talking about it, and writing about it all day every day. Yet for those who survive it becomes a semester of singular educational and personal value.

The Literature Semester was first taught in 1968. Previously, the English department had offered an annual summer institute for high school English teachers during which intensive study in team-taught classes allowed them the opportunity to refresh their personal relationships with literature. U of I's English department chairman, John C. Gerber, thought that the program had potential value for undergraduates. At his urging, it was developed by Robert Scholes (now at Brown University), John F. Huntley, and Richard Lloyd-Jones, now director of undergraduate studies in the English department.

As its progenitors envisioned it, the course would consist of close readings of major literary works in the context of a historical survey. Genres, influences, periods, and trends would be traced and interrelated. The ceaseless, intense concentration, as Scholes described it, would be like training for a sport: Ideally the rigorous mental discipline would produce suppler, subtler, more graceful literary critics.

In addition, as it developed, the course resolved one nagging departmental dissatisfaction: the sense of isolation and anonymity that inevitably arises in a department with nearly 50 instructors and over 600 majors. At the very least, those who subjected themselves to the semester's massive literary (as well as personal) exposure would come to know each other very well indeed.

The first semester was called "English Literature Before 1900." Beginning with *The Seafarer* and *Beowulf*, it traced English fiction, poetry, and drama up to George Bernard Shaw. Five semesters later, a similar semester was first offered covering "American and Contemporary Literature." This semester surveyed American literature from Jonathan Edwards to Kurt Vonnegut and also dipped into twentieth-century British literature. One semester the department offered a "Continental Literature Semester" from *The Odyssey* to *Ulysses*; but while this course still has some supporters among the English faculty, it has not been given a second time.

Each teacher has attempted his own modifications and revisions, so that a detailed history of the semester's evolution is now impossible to trace. As it exists today, the course is run as follows: It offers a total of 12 course credits and students may take one additional 3-credit course during the semester if they think they can handle it (most do), but they may also take the Literature Semester and nothing else. Enrollment is limited to 30 students, and today, with the job market easing the pressure on English departments throughout the country, it is rare that more than 30 try to enter during any one semester. Usually there are between 20 and 30 students in a class. There are no prerequisites, but the student must convince one of the course's teachers that his desire is sincere and that he understands how grueling the work will be. Perhaps half the students who discuss taking the course are talked out of it. Most who enter are upperclassmen who have already taken one or two literature courses, but have not yet had the intense exposure the semester offers.

Classes meet for two hours every day, five days a week. Students and teachers typically discuss one work (or a group of short works) during the first hour and other material during the second, after a 10-minute respite. Three faculty members, one of whom is always a full professor, teach the course, and all are present for all discussions.

Class work is outlined in a syllabus that explains daily reading assignments, class discussions, writing assignments, and other projects. Usually entire works

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are assigned (*The Prelude, Emma, Moby Dick*) rather than selections, and assignments are often designed to explore literary relationships (the comedy of wit from Shakespeare through the Restoration to Oscar Wilde; the view of marriage in Austen, George Eliot, and Ibsen; the different uses of source material in Chaucer's *Troilus and Criseyde* and in Shakespeare's *Troilus and Cressida*). Certain assignments are constants in the course (Book I or II of *The Faerie Queene, Paradise Lost, Gulliver's Travels, Middlemarch*), but there are usually one-time-only experiments, such as *Vathek, Mansfield Park,* and *Frankenstein.*

Every faculty member who has taught the course has struggled to avoid monotony. The following are the most successful techniques devised for varying the material and are now standard in the course.

Revolving discussion leaders: The three faculty members take turns directing discussions and each leads at least one hour's discussion of each major work. Since the instructors frequently interrupt each other with questions and responses, by the semester's fourth or fifth week students begin to feel comfortable doing the same. Some have even learned by pedagogic example to take discussions away from the leader. By the end of the course, two-student teams often prepare and lead an hour's discussion (following some consultation with an instructor).

Staging plays: The class is divided into three acting groups and twice during the semester each group performs portions of a play under discussion. Performances are held in the classroom after a week or two of rehearsal; though there is no budget for production elements, students often become ingeniously competitive at devising their own costumes and props. By and large, these are student-run performances, though once in a while an instructor will be pressed into service as director or actor. The point of these exercises, besides providing a break in the constant literary explication, is to examine the plays as drama, to discover production problems posed by the playwright, and to experience the effect of the text in live, if amateur, performances. Iowa's faculty have found, for instance, that Restoration comedy communicates to students much more effectively in performance than on the page. Classes have also experimented with poetry readings and with excerpts from various works that offer different approaches to the same theme.

Revolving discussion material: Except when a paper is due (and students probably have studied only the paper's topic) or a play is being performed, no two consecutive hours are spent on the same text. Longer works, such as *The Faerie Queene* or *Paradise Lost*, may be discussed over two weeks and will be assigned along with shorter works. Chronology may also be interrupted. For instance, *The Crucible* has been read along with works by Jonathan Edwards and Anne Bradstreet; Boswell's *London Journal* has been looked at prior to any other eighteenth-century text as has Mill's *Autobiography* from the nineteenth century. Such disruption of historical order can help orient students, providing them with both a forecast and an introductory perspective.

Varying written assignments: Papers are assigned weekly. Some require textual analysis, others comparing and contrasting; in others students must trace recurring themes or a particular author's point of view. Often, instead of literary analysis, students are assigned stylistic imitations ("Write a Shakespearean sonnet," or "Compose a Spenserian stanza"). The three instructors rotate devising (and grading) written assignments. Last fall there were 12 textual exegeses and 4 stylistic imitations. Students were excused from any two assignments they chose (and most chose the two that fell during weeks when they were acting), but four assignments were inescapable (on Spenser, Milton, Austen, and Eliot). Usually papers on novels or epic poems are assigned at the beginning or in the middle of discussion of the work.

Subdividing the group: Once every week or so, the 30 students are divided into groups that meet separately with one of the instructors. The subgroups are composed of different students each time, and their purpose is to encourage the quieter students to participate. Those who regularly dominate discussions are separated from students who are easily intimidated. Frequently those who begin to blossom in less competitive subgroups also start to contribute to regular class discussions. The semester's schedule often provides one unplanned hour each week when such sessions are held, but that hour is also sometimes used by the entire class to discuss topics given short shrift earlier in the week, or to pursue virtually anything students wish to introduce. Occasionally, subgroups are left on their own to discuss course material among themselves. Only once has an instructor reported returning at the end of the hour to find all the students gone.

> "The Literature Semester faces the vacuum created in most large universities, the emptiness in student and faculty lives arising in part out of teaching and learning being anonymous, fragmented, unshared experiences."
>
> *Kenneth E. Eble*
> *Department of English*
> *University of Utah*

Learning experience:
Literature Semester. Prerequisite: one previous literature course. A pre-enrollment interview with the course chairman is required during which the work load is clearly explained. Enrollment: 30.

Other descriptions:
Pamphlet available upon request.

Contact:
Miriam Gilbert, Department of English, University of Iowa, Iowa City, Iowa 52242, (319) 353-3736.

By and large, the teachers avoid lecturing, though one may occasionally deliver a short monologue when the assigned reading comes to his or her specialty, or there is a need to summarize—or when a crop of unsuccessful papers is returned. Occasionally guest lecturers are invited to class, but they seldom are satisfactory. Students tend to resent guests, who usually seem determined only to pontificate. But outsiders who are willing to accept group participation often find themselves at a loss. "It's as if they've stepped into the middle of someone else's conversation," explains one instructor.

Students are given four grades ("to keep peace with the computer," explains Lloyd-Jones) and these grades can be any combination of letters that the instructors think is appropriate (AABB, BBBC, CBCC). The grade is arrived at by evaluating both the student's papers

and class participation. During one semester, an instructor met weekly with each student to grade his or her contribution to class discussion during the preceding week—which got students participating in a hurry. But most instructors use less powerful methods. Strong-arming isn't necessary. "It's hard to hide in this course—for students or for faculty!" comments Lloyd-Jones.

Veteran instructors have charted students' emotional cycles in the course and note nadirs of despair during the fourth and twelfth weeks when students become sullen and feel overwhelmed by the work. In fact, the workload has lightened (by about 20 percent) over the years as instructors have discovered the limits of student endurance. The first year also included a six-hour final exam. There are no longer any exams in the course.

Even though no one, student or faculty, finds the course less than arduous, there are rewards. Students arrive with an active interest and instructors discover they can concentrate more on content and less on presentation than in most undergraduate courses. More is required of the students, but they receive more personal attention in return.

And the students do grow. As the semester progresses, instructors see marked improvement in students' writing, speaking, and analytical abilities. In addition, students begin to respect each other's contributions, listen to colleagues, and respond to them (in contrast to most courses where students tend to ignore each other, knowing they won't be examined on a fellow student's comments). Sometimes, enthusiasms soar. At the end of one legendary class, a student announced, "I think we should have a round of applause for John Milton," and the whole class joined in.

This does not mean, of course, that Iowa produces a new crop of Edmund Wilsons and Leslie Fiedlers every semester. Final grades reflect the typical U of I spectrum and student insights are not usually overwhelming. Nor is there a lathered elbowing among students to contribute to discussions. But there is an obvious readiness to participate, a respect for varieties of opinion, and a mutual intellectual concern during class discussions that one rarely encounters outside graduate seminars.

At the end of each semester, students are asked to evaluate the course. About 80 percent of the responses reflect satisfaction. Students who survive the course (perhaps five don't during a typical semester) report that it has been valuable to them—even during the two or three semesters when the instructors personally felt the course had not succeeded.

Many students go on to enroll in the second semester, and most take additional literature courses that are team taught and discussion-oriented. (Having discovered that their discussion contributions are valued, most find they are no longer able to tolerate traditional lecture courses.) Many students majoring in other disciplines add English to form a double major, and some exchange previous majors for English. A few also realize that English is not for them.

Perhaps most impressive, graduates of the semester return repeatedly to tell their former instructors how valuable the course has been for them. One graduate, now a candidate for a PhD in English, discovered in the course that English offered precisely the sort of humanity he was seeking. "I expected an overview," he explains. "What I got was an understanding of the human element in response to literature." Another graduate, also pursuing his doctorate in English, explains, "My entire concept of teacher-student relationships within the classroom changed dramatically. I began to see myself linked by interest to members of a profession, with something to contribute as well as much to learn."

The Literature Semester has influenced other English courses at Iowa, some of which now rehearse and perform scenes from dramatic literature. And though the semester was not the first Iowa course to be team taught, many more have arisen because of it.

The cost of the semester is slightly greater than it might appear. It requires no new equipment, of course, but it takes up one third to one half of each teacher's load. Assistant and associate professors teaching the course get credit for two courses and full professors get credit for one. Thus students get four courses at a cost to the university of five. Then, too, the burden on instructors is substantial. The amount of credit received does not reflect the extra time required for class preparation, and the hours spent in class and advising students outside of class are also more numerous than teaching credit acknowledges. Indeed, the demands from stu-

When the Subject Matters the Student Learns

El Paso Community College in Colorado Springs, Colorado, has had an open-door admissions policy since it began seven years ago. Many of its 6,145 students come seeking retraining, and the average age of all students is 33. From the outset, one of the aims of the communications department was to create for the career-oriented student an alternative to the English requirement—one that would be relevant to the special needs of the vocational student both in college and on the job.

Originally developed by John D. Huff, now chairman of the Communications and Humanities Department, Communications Sequence, as the course is called, now has the wholehearted approval of both the vocational and English faculties, who believe that the course meets the needs of vocational students better than a traditional approach would.

Teachers in all three courses in the year-long sequence avoid lectures (except when introducing a new topic) since they believe that few vocational students learn best from a lecture approach. Instead, most class time is spent on demonstrations, laboratory work, multi-media presentations, and group discussions. In addition, formal textbooks are laid aside and every attempt is made to tailor the course to meet the individual needs of the students. Much of the sequence is designed to strengthen basic English skills. But while the English student writes literary analyses, the Communications student writes job reports.

From Communication I through Communication III, the sequence continually reinforces what has been learned previously. While the first course concentrates on basic speaking, listening, and writing skills, the second proceeds to the more detailed mechanics of writing, while continuing work on communication skills. The third trains students in presentational techniques, requiring them to present both short reports and lengthier, more formal ones. And whatever the activity at hand, the student is constantly reminded to use listening skills, organizational techniques, and other effective communication devices.

dents for emotional support are far greater in this course than in most others. Everyone is thrown together on such an intense and personal level that students approach instructors for advice and understanding, sometimes with enough frequency to cause a few instructors to complain they spend more time as therapists than as educators. Such demands have frightened some faculty away from teaching the course.

Nevertheless, Iowa's English faculty make it clear that the reason this course is offered every semester has to do less with its educational value than with the fact that most instructors enjoy teaching it. Many speak of the escape it offers from the narrowness of a specialty and the opportunity to renew their romance with the sweep of literature. Many also admit privately that the course allows them to read texts they should have looked at years ago but never did, and virtually everyone agrees that his or her teaching improved during the course.

Several factors account for this professional improvement. To begin with, the teachers are under constant scrutiny by their colleagues. Should a teacher come to class ill-prepared, associates will know it. On the other hand, if a teacher has been legitimately kept from adequate preparation (because of illness or family crises, for instance), there are other instructors prepared to take over. Further, when a teacher is not getting through to students for whatever reasons, other minds are present to help clarify. And, of course, colleagues learn from their differing perspectives and pedagogic techniques.

The format of the semester, clearly, is not one every educator would feel comfortable with. The professor who prefers to lecture or insists on reigning unchallenged in his classroom may well panic in such an exposed position. Indeed, the two or three semesters that have been less than fully successful failed, suggests Richard Lloyd-Jones, because the faculty mix was wrong. Lloyd-Jones now tries always to include at least one woman and one young instructor (not necessarily separate individuals) in every three-member team. Of the 45 current members of the department, 29 have participated in the semester at least once, and some, such as Miriam Gilbert, who has taught the course five times since coming to Iowa in 1969, return to it often. Most of those who have not taught it probably never will—a matter of temperament rather than ability.

As for the students, it is nearly impossible to generalize about those who choose to take the course. Gilbert suggests there are usually a few transfer students in need of English credits, and one or two malcontents looking for something different. A few others seem to enter the course hoping to punish themselves with hard work for diverse neurotic reasons—it is Gilbert's impression that they are usually the first to wash out. But most don't seem to fit into any set pattern.

The English department grants that the course is a highly specialized experience. Yet in many senses, this specialization is an ideal embodiment of the scholarly community in which all participants probe, question, and learn together. For most, the value of this community proves as precious as it is unique. ■

The course sequence has been taught every year since the college first opened, and it has been completely revised three times. Currently its texts include the *American Heritage Dictionary*, several writing manuals, and an original syllabus for each course. These syllabi run 50 pages or more in length and contain samples, exercises, and step-by-step communication techniques (e.g., Before delivering a speech you should ask yourself the following questions: How many listeners will be present? How old will they be? How large is the room?)

Whenever possible, instructional resources are borrowed (usually gratis) from the surrounding community. The Colorado State Library Film Service, for instance, has many films from business and industry that demonstrate typical job interviews, and a local hospital has given presentations on cancer, health care, and the terminally ill. However timely the information presented, students concentrate on analyzing the speaker's effectiveness.

The course also makes use of the students' experiences. Secretarial students are asked to share their knowledge of letter writing, and students in police science, fire science, and nursing, many of whom are already on the job, discuss writing reports. This kind of sharing increases the interest of the working students and others in the class as well.

The three courses of the sequence are offered every quarter. Recently there were 24 sections, each averaging 27 students—and this was described by the sequence's instructor-coordinator, Velda Poage Asher, as a light quarter. As instructor-coordinator, Asher teaches nothing but communications. She supervises all sections, develops new materials and new course content when appropriate, and coordinates and develops new audiovisuals. She meets regularly with both staff and students to see if students' goals are being met. Students also evaluate the course through questionnaires administered by Chairman Huff and by an instructor of a section other than their own. Huff digests all this information, then meets with instructors. When it is determined that goals are not being met, course adjustments and/or instructor reassignments are made.

Significant numbers of former students from local hospitals, service stations, businesses, and police and fire departments respond informally that their courses were both appropriate and effective. Many graduates of the course, Asher says, go straight to mid-management levels and nearly every student finds a job. One hundred percent of the course's nursing students seeking employment find positions, and the placement of firemen and policemen is nearly as successful. A great many secretarial students are hired right out of class, and they continue course work in the evenings. After completing the communication sequence, students frequently decide to continue in the more sophisticated writing courses offered by the English department.

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LITERACY THROUGH SOCIOLINGUISTICS

by Evan Jenkins

Navajo Community College, the first college in the country run by Indians for Indians, is an extraordinary place in many respects. And it is probably unique among institutions of higher education in the emphasis it places on a very fundamental goal—literacy.

Navajos refer both to themselves (the reservation population is about 140,000) and to their land (25,000 square miles, mostly in Arizona but spilling into Utah and New Mexico as well) as the "Navajo Nation." Aside from the implicit assertion of ethnic and cultural identity, the term reflects the reality of social and geographical isolation: The Navajo remain, in a way that even other Indian tribes do not, a nation within a nation.

And it is a very poor nation indeed; per capita annual income is roughly $900 a year. By Anglo standards, it is a nation that is educationally backward. The tribe estimated last year that 30 percent of those aged 16 or older had no schooling whatsoever. Some 50 percent were unable to read and write. And according to a federal study, of the 3,000 or so Navajo children who enter school each fall, 70 percent know no English.

For the tribe and its college, preservation of the nation's separateness is perhaps first as far as educational purpose is concerned. Yet the other goals are no less imperative. Deprivation with cultural pride is still deprivation, and the college must strive to prepare its students for competition in a world dominated partly or wholly by non-Navajo standards. One of these standards, of course, is a degree of literacy in English.

But literacy has been impeded both by cultural barriers and by Anglo officials bent on assimilation. Randall W. Ackley, himself an Anglo, is chairman of Navajo Community's Division of Communications, Fine Arts, and Humanities. He speaks angrily of white education for Indian children. "The feeling has been that the student should either give up Navajo language and culture or relegate them to the private part of his life. I've encountered that even among faculty here. A number of kids who've gone through school have built a shell and resisted education just as a matter of survival. And of course they don't learn."

It is precisely because they don't learn under such conditions that Ackley has sought to bring to the literacy program at Navajo Community the perceptions of sociolinguistics—the examination of those attitudes, socially induced, that affect the learning of language.

As Ackley points out, Indian education is essentially alien education. Virtually all Indians with any schooling are products of schools run by whites—public school systems and church schools, for example, and those run by the Bureau of Indian Affairs. Until very recently, there have been few attempts to adapt these schools to their pupils. In fact, the reverse has generally been the case. As a result, many Indian students have reacted negatively and defensively to an atmosphere that was at best foreign and at worst hostile to what was Indian.

Teddy Draper was one of the famous Navajo code talkers who befuddled the Japanese in the Pacific in World War II. A self-taught linguist who teaches the Navajo language at the community college, he loses his wonted geniality when speaking of his early encounters with white-run education on the reservation. "I didn't see a white man until I was 6, and I couldn't speak English until I was 13," he recalled one day between classes. "And in school, no Navajo, they forbid it. They say, 'Speak English,' and I can't. When I need something important, I speak Navajo and they punish me. Make me stand in a corner."

The experience of punishment for being Indian is common among Native Americans. Many have suffered worse penalties than standing in a corner; for others, the punishment was more subtle. Allan Begay, a Navajo who is director of the community college's Navajo Resource Center, speaks sadly of Indian parents who see the value of white education; parents who have been partly assimilated and fail—perhaps from embarrassment—to teach their children the Navajo ways and language. "You can get bruises inside your mind where it

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doesn't show, just the way you get bruises on your body," he says.

For the typical Navajo student, this sort of insecurity is likely to be compounded. For one, English is virtually always his second language, though he is made to learn it as if no other existed. In addition, Navajo culture has a fairly rich literature of its own, but it is an oral one. There is still a dearth of written material in Navajo, and so for many who speak the language, print itself is a strange and intimidating medium of communication. And finally, notes Ackley, there is a vast difference in structure between English and Navajo.

Given all these impediments the sociolinguistic approach seems vital to the college's literacy program. In practice, it translates first into the use of material relevant to Navajo life when possible; and second and more importantly, into an emphasis on understanding that slow learning does not imply stupidity.

Most of those who find their way to Navajo Community have had some formal schooling, and many are high school graduates. Few, however, can read and write at the level of high school seniors. To get them that far, there is a program called Directed Studies, a precursor to the College-Level Literacy program designed for those who choose to seek the associate degree. (It also prepares students to pass the General Educational Development test for a high school equivalency diploma, and many stop there.) At the college level, proficiency in reading, writing, and discussion must be demonstrated on three levels, roughly those of a beginning freshman, an advanced freshman, and a sophomore. The program stresses individual attention in an informal tutorial style, and workshops and labs supplement classroom work. Over all, about two thirds of the school's 350 full-time students this spring were enrolled in one or more courses designed to produce literacy at one level or another.

Common to both the Directed Studies and the college-level program is the concept of competency-based education. Goals are established for each level of proficiency—at the first level, for example, writing a complex paragraph and reading an introductory college text. A student must demonstrate that he has reached the exit level for each phase of the program before he moves to the next. Thus, he moves only when he is ready. That may be after three weeks or three semesters; movement is determined by achievement, not by time.

Navajo language instructor Teddy Draper explains a difficult sentence.

The College-Level Literacy program seems to be very much Randall Ackley's creature, and apart from his formal administrative duties, he doubles as the program's chairman. A graduate of the University of Minnesota, Ackley began his doctoral work in Elizabethan and Jacobean literature and finished it with a degree from the Union Graduate School in American Studies. He has been a big-university English teacher (University of Texas at Austin, University of Utah), small-college department chairman (McMurry College in Abilene, Texas) and curriculum consultant-cum-activist (Pembroke State College in North Carolina, most of whose students were Lumbee Indians).

At 44, Ackley is an odd mixture academically—traditional in his insistence on the importance of effective communication; rather unconventional but quite pragmatic about what that is; and iconoclastic to the point of occasional contempt when he speaks of the educational establishment. Spoken in a soft monotone, the words alone—"absurd," for instance—convey his harsh feelings toward such things as "academic lockstep." Or "remedial," which he finds pejorative on its face and fears may instill a damaging kind of condescension. "If you're using standard measures, maybe 90 percent of the people at this college would need remedial work," says Ackley, from whom "standard" and "standardized" often sound rather like curses. "It doesn't make sense to call it remedial; you're assuming that the student is stupid, that there's something wrong with him because he reads at an eighth-grade level. You assume that because he reads like a 12-year-old he must be thinking that way. It just isn't true. And when the first part of his life is carried on in Navajo and you're trying to teach him English, it's a particularly dangerous assumption. We've got adult people here. They carry on adult lives and we deal with them at that level."

Ackley became a faculty member at Navajo Community three years ago (he had been a consultant there for a year) expecting to teach college English. "The first day here they told me I'd be teaching a class in reading," he recalls wryly, "so I taught a class in reading. And as I looked around, I saw that things were at best indifferent in the area of reading and writing, and at worst criminal." The faculty teaching basic language skills, including himself, were simply unqualified for the task.

With an assignment from the college to develop a program for promoting literacy in a college-age population, Ackley set out to improve his own knowledge of linguistics and learning theory. At professional meetings, he says, he found three classes of seemingly successful teachers of reading and writing. Those who set up their own criteria for student success found the students

Learning experience:
College Level Literacy Program. No prerequisites: students accepted at all levels. Enrollment: 300.

Similar programs:
Michigan State University.

Contact:
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achieving, but Ackley concluded that the criteria were too mutable and that a self-fulfilling prophecy was at work. Those who worked a hundred hours a week seemed to have had a measure of genuine success, but only by dint of plain perseverance. In neither case, Ackley decided, did the teachers really know why they did what they did, or what worked and what didn't.

A third class of people convinced him that they worked from a method, that they understood it, and that it worked. Along with sociolinguists, these people included psycholinguists—students of the mental processes involved in mastering speech, reading, or writing. Some held, with B. F. Skinner, that the process is basically imitative: The learner copies what accomplished language users say, write, or read. But those who excited Ackley adhered to the view of Noam Chomsky and others that language learning is essentially generative: The need for communication, however it arises, and at whatever level, sets off experimentation, selection, practice—in a word, experience—that improves skills.

Ackley likes the psycholinguists' phrase "the language experience approach" because it suggests a continuum in which one learns primarily by doing: to talk by talking, to read by reading, to write by writing. All, of course, with guidance by the faculty. "We see the whole language process as something that begins when you start to talk and continues in no set time frame," Ackley says. "As the middle-class white kid goes up the scale, he moves in a pretty straight line until he levels off, maybe at the college level. Our kids, with no home experience with print and with perhaps a history of being in and out of school, have leveled off somewhere much further back. We have to bring them to the college level in a reasonable time. We assume that the process is natural and depends on experience. We try to give experience that is both concentrated and enriched. We're not really teaching the student; he's learning."

Dennis Schneider, who joined Navajo Community's faculty last fall, earned his doctorate in applied linguistics with a dissertation on Japanese learners of English. He is a believer in sociolinguistics. "With the Japanese, I seemed to spend a lot of time working on grammar, and it's somewhat the same here," he says. "Remember, the Japanese were doing graduate work in this country—you were dealing with excellent minds. Again, there's an obvious parallel to the situation here."

The language skills requirement for an associate degree at Navajo Community once comprised no fewer than 28 separate components: grammar—parts of speech; grammar—phrases and clauses; sentence structure—making words agree. And so on, through essay writing and a research paper. "It was sort of ridiculous," Ackley says. "Some of these kids would write a perfectly good essay but flunk some subsidiary thing like modifiers and they wouldn't pass. Or they would flunk the punctuation part but give you excellent punctuation—in context—in their writing. The word got around and attendance dropped off and after a while nobody even signed up for the classes. Which was a terrible shame because practically everybody at this college needed help with language. The idea was, 'All you people go in this door and come out at the end of the semester with certain skills.' It was an absurd kind of democratic assemblyline education. It didn't work."

Under pressure from Ackley, and amid considerable faculty turnover, the 28 components have been narrowed gradually to three broad categories—the sentence, the paragraph, and the essay. Students are required to handle all three as reading, writing, and speech skills. Ideally, but in practice so far only on a small scale, reading, writing, and discussion are weighted equally in a single class, the theory being that they are inseparable in the mind as parts of one overall process.

There is some regimen in the differentiation between entry, intermediate, and advanced (sophomore) levels. And in fact as students progress through the levels of difficulty they should encounter all the components on the earlier list. The key difference, as Ackley and his colleagues see it, is that the 28 skills emerge naturally from the experience of pursuing basic goals. Instead of drill in the use of modifiers, there is writing—repetition of the process of using modifiers as they are called for. And instead of pass or fail in one semester—or pass with a D without having learned—there is competency-based movement.

His remarks about the 28 skills reflect Ackley's view of standard English. It is a tongue, he asserts, universally taught in the United States but almost never used outside school. Communication, he says, is the key, and assuming one communicates clearly and depending partly on one's career goals, it is not terribly important if one drops the "-ed" from the past tense as Navajos tend to do. On that score, Dennis Schneider reluctantly demurs; he is more of a structuralist than his boss.

"I do try to teach standard English," Schneider says. "It's a tool, a credential, a qualification that helps people get ahead. They're more versatile, better able to handle different situations. If the student doesn't put the '-ed' at the end of the verb, I feel he hasn't finished the requirement, although at some point I might give him a provisional pass. I think you just have to try to work with him until he gets it." Although they don't quite see eye to eye on standard English, the program's chairman has made Schneider its evaluator because, he says, Schneider will be demanding.

The program seems to be in a constant state of change. In addition to the three basic skills—sentence, paragraph, essay—the college has required students to produce a research term paper. Ackley is working to eliminate that requirement as an unnecessary consumer of time; a course in using the library would make more sense, as he sees it.

As the spring semester ended, Ackley and the others in the literacy program were preparing for a rather radical departure. Starting this summer, students are being offered two options in fulfilling the language-skill requirement besides literacy in English. One permits a student to fulfill the requirement in both Navajo and English; the other consists of Navajo alone.

The idea seems drastic, since in contemporary American society Navajo is a foreign language. Ackley's view is that some students leaving Navajo Community College will need only their own language as they pursue careers on the reservation, and that those seeking a bachelor's degree at a four-year college will have had an adequate start in the mastery of language. "Students here should have a choice, a choice they have nowhere else in the country. Many will be working with Navajos, and training in their own language may be more

Evaluate the
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valuable than training in English. And they'll be learning Navajo at the college level. We find most of them are at about the age of 6 in Navajo, and behind in English too, so when they get here we have to make up the whole language-experience ladder. If they can do it in Navajo here, the ones who go on can do it in English somewhere else. They'll have the ability to handle language."

Miles Zintz, a professor of education at the University of New Mexico, shares Ackley's view of the relative unimportance of standard English in some situations. In discussing a teacher-training program involving his school and the University of Arizona at Tucson (some of whose participants are graduates of Navajo Community), he said: "The people in this program may well have a psychological advantage over an Anglo teacher with middle-class values who has to deal with children he didn't understand at all. I'm aware that some may not get through all the competencies we expect [Anglos] to get through, but I feel that if these teachers can meet a young Navajo child coming to school, and show the child that school is a nice place to be and Navajo is an acceptable way to speak, the compromise will be well worth it."

There has been no formal evaluation of the college's literacy program by outsiders at this very early stage. Ackley has had encouragement from linguists and others familiar with what he is trying to do, partly because much of it, if it works, would be replicable elsewhere—the competency-based approach, the supportive bilingual and bicultural emphasis, the use of psycholinguistic and sociolinguistic approaches to learning.

But the amalgam of the new linguistics and a kind of custom-made pedagogy has produced some statistics that Ackley finds encouraging. Enrollment in English courses has risen from 145 in 10 classes in the fall of 1973 to 278 in 45 classes this spring, with the college's total enrollment more or less stable over that period. In the spring of 1973, a workshop in essay writing enrolled 18 students, 13 of them repeaters. Five did not complete the workshop, and 5 of the 13 who did got only a provisional pass to the next level. A year later, 39 signed up for a workshop in basics (sentences and grammar rules), and 8 completed it with a recommendation to go on to a more advanced writing workshop. The instructor dropped 16 for poor attendance, 6 left the course on their own initiative, and 9 received incompletes.

Last fall, Dennis Schneider taught a class of 38 that combined the lowest and next-lowest level of the literacy program. Two students failed to pass the lowest level. Nine passed that level and one the next level by the end of the term. One dropped out, and one was dropped because of poor attendance. The rest were either advanced on the basis of performance on a diagnostic test or transferred to a more difficult course before the semester ended, having demonstrated the desired competence.

> **"More needs to be done to break down the barrier to acquiring language skills which formal English instruction sets up for almost everyone except those who have already acquired such skills."**
>
> *Kenneth E. Eble*
> *Department of English*
> *University of Utah*

Reporting to the college's administration on the English language and literature program for the fall of 1974, Ackley proposed a number of changes in the type of personnel required for effective teaching and in the structure of program and courses. He had this to say about two basic courses: "Our evaluation of ENG 120 and Reading gave us a success rate of about 30 percent. I was told that that was the usual rate for community colleges. I think that is absurd and that the program and/or instructors must be changed to give us a more acceptable success rate in these required courses." Most of his major recommendations seem to have been followed, and he has put together a team with the academic background to press them forward. The initial data suggest that his hope for a higher rate of success has been realized at least in part.

Jeanne Hailstorm represents a success story for the program. Married and the mother of two children, she is a licensed practical nurse who wants to become a registered nurse. She was able to attend Navajo Community for one semester this spring for nursing courses and literacy classes. Starting at the lowest level of the literacy program, she moved in that semester to the highest, having written an extremely well-organized, thorough, and lucid report on medical screening of schoolchildren on the reservation. The term paper she was working on as the semester neared its end dealt with alcoholism.

Dennis Schneider is quick to point out that Mrs. Hailstorm is "not average—she's working, she knows what she wants, and she's motivated." John Waters (not his real name) is a somewhat different story.

Now in his early twenties, married and a father, Waters graduated in 1973 from a public high school in New Mexico. The subject that interested him most, he says, was English.

"I like to make up poems and stories," he said as he submitted uneasily to a brief interview." I read Robert Frost and other poets. In high school I had trouble with English, though. I study day and night and fail and had to keep on it."

With his high school diploma, Waters was placed in Directed Studies, the precollege program, when he entered Navajo Community College. He finds tenses difficult, but feels that reading and writing have helped with the problem. He is extremely soft-spoken and, according to Schneider, has difficulty applying himself. "Mostly what I would like to do is teach my young people," Waters says. "We need teachers very much." This spring, Waters was struggling in the lowest of the college-level literacy courses. Schneider seemed to think there was a chance the young man could make respectable progress ("He's obviously bright.") on the basis of his performance in writing paragraphs. One, written near the semester's end, went this way:

"When I was in first grade it was lonely and so sad. You only hear the birds are singing outside and the dog barking. When I was in class I only hear my teacher voice with mean looks in his eyes. I always lost in the school building and they have to find me everytime. I used to see only a small bird in a birdhouse above me. Sometime my tears dripping down in the classroom for my parents and for my sheeps. Everyday I used to see the same old things, and it seem like the same day again. I used to get lonely and sad everyday with no hope in my mind. I used to hated my teacher, because he make me cry everytime, so I run away lots of time back to the sheep camp."

Schneider said of Waters, "He's very dramatic, and he emotes so much sometimes that it comes out garbled. This class is encouraged to write clear, hard prose, but I don't step on him."

He said he planned to pass Waters, provisionally, to the next level of the literacy program. ■

IN THE FOOTSTEPS OF THOREAU

by Judith Miller

The pastoral is a state of mind. A student from New York University or the University of Chicago would probably find the quality of life in Ann Arbor, Michigan, bucolic. Yet for Walter Clark, Jr., an English professor at the University of Michigan who was raised in New England, the university complex with its over 25,000 undergraduates is as urban and anonymous as any sprawling modern American city campus. Clark began to wonder whether his students would ever be able to comprehend in this impersonal environment the pastoral literature of Thoreau, Frost, Hawthorne, and others. Clark decided there had to be a better way and place in which to approach the alien world of the pastoral. After some thought, he settled on a solution and a setting far more conducive to the instruction of his favorite brand of American literature: Why not study the literature of New England in New England?

And so, in May of 1975, Clark, his department colleague Alan B. Howes, a cook, a nature instructor, and 20 undergraduates—replete with sleeping bags, backpacks, camping tents, hiking gear, musical instruments, typewriters, writing journals, and an impromptu portable library—piled into two University of Michigan minibuses and headed for New Hampshire, the source of much of America's pastoral literature. This was the inauspicious beginning of what is now known as the "New England Literature Program."

There is nothing particularly innovative about the concept of on-site learning, which has been with us as long as the university field trip and the junior year abroad. What is impressive about Clark's program, however, is that it strives to relate the students' learning to their style of living. Clark sees it as an attempt "to clear away the artificial impediments to learning."

The program begins once the official school year is over, early in May—just as the ice is breaking on Lake Winnipesaukee in Wolfeboro, New Hampshire—and lasts six weeks. In 1975, the university rented Camp Belknap, a YMCA boys' camp situated on the shores of the lake. In 1976, the program moved to Camp Kehonka, a private girls' camp down the lake. Students live in the camp cabins and hold classes in front of the main lodge fireplace or in a field or on a dock when days are sunny. Staff and students share housekeeping chores, wash dishes, and assist the cook.

Students meet for two-hour classes in the mornings, five days a week. Afternoons are devoted to reading, free time, nature observation, field trips, and meetings of special subject groups that may arise spontaneously out of students' interests. During the evening, students study and meet with Clark and Howes to discuss their work. Two days a week they take field trips—to nearby towns, the Maine seacoast, and the neighboring White Mountains. Some weekday evenings are spent listening to Wolfeboro residents lecture about politics, early New Hampshire history, Abenaki Indian culture, or New England fishing.

Originally three two-credit courses were required: Major American Authors to 1870; Literature and Culture—the New England Experience in Poetry; and Creative Writing. Now the credit hours have been upped to eight, and Clark and Howes would like to add optional courses in biology and history if finances and staffing can be arranged.

The prose course concentrates heavily on Thoreau, Emerson, and Hawthorne but is not limited to them. Students begin with the journals of Thoreau and Emerson, and then go on to read a series of Hawthorne short stories and perhaps Melville's *Pierre*. Thoreau's accounts of his three trips to the Maine woods were read the first year while students visited the real thing, and the course ended with Hawthorne's *The Blithedale Romance*, which provided an occasion for reviewing the communal living experience. Students also suggested contemporary works that were incorporated into the program: *A Separate Peace* by John Knowles, and Annie Dillard's *Pilgrim at*

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Tinker Creek, a work previously unfamiliar to Clark or Howes. The poetry course focuses largely on Dickinson, Frost, and E. A. Robinson. Frost receives special attention because of his poetic explorations of the pastoral, and because of his special connections with this and other parts of New Hampshire. In addition, students read anthologies containing the poems of other New England poets.

The heart of the program, however, is creative writing—or more accurately, journal writing. Many participants had never kept diaries or journals before. Many were unsure about what kinds of experiences and thoughts should be entered. While the journals of Thoreau and Emerson provided some guidance, Clark and Howes have also presented their students with a list of "17 Things to Do in a Journal," their compilation of mundane and exotic suggestions aimed at making students feel more comfortable with their spiral notebook companions. "Copy poems, sentences, paragraphs, graffiti, cemetery inscriptions, road signs, sayings," counsel Clark and Howes. "Tell lies. Give commands. List books you want to read. Write 'Kilroy was here.'" The instructions are indicative of the informality, spirit, and enthusiasm that Clark and Howes bring to the program. Their attachment to New Hampshire and New England is infectious; certainly the students who were in the original group are still imbued with it.

The journals reflect the extent to which most of the students were stimulated and sometimes jarred by their half-semester in New Hampshire. For some this was a first encounter with country living in or outside of New England. Many entries reveal an initial discomfort with an alien culture and environment. "Something there is about New England that I so dislike," wrote one student after a trip to a neighboring town. "Its cute contrivance...everything so beautifully trim and appealing, but unapproachable as all has been long spoken for. The land seems to be possessed, not merely owned."

Gradually, students seemed to lose their wariness of this new world. The journals provide a written testament to their transition from discomfort to a deeply felt attachment to their surroundings, to a strong resentment of any disruption from the outside world. "I woke up this morning and groaned in unison with the din supplied by the equipment outside," wrote Barbara Starr of an incursion of bulldozers. "I glared out the window. My first thought was: They're strip mining the baseball field!!! Then, more realistically, but no less angrily, I realized what was occurring. I hated the men driving those beasts. I thought, Why wasn't it in the contract that they couldn't inflict this upon us pastoral people?

Another student summarized the difference between formal classes in Ann Arbor and the New England program. "I've been reading and writing out on the grass again, and thought of another difference between this place and Ann Arbor. That is, whenever I go outside to study in Ann Arbor, I find I cannot concentrate. I spend all my time looking around, listening, and smelling. Here I don't ignore nature, instead I'm more a part of it."

Student journals are useful vehicles for self-discovery, an important component of all learning. Many of the entries discuss loneliness. Some of the students were struck by their rootlessness, compared with Wolfeboro residents. "The townspeople have a tremendous sense of living history," said Mitch Meyer, a political science major. "For them, history is not found in museums, but in their bones."

For many of the students, this marked the first time they had been cut off from the accoutrements of city life: movies, concerts, noisy student bars. Clark and Howes discouraged students from bringing record players, televisions, and radios. There was no friendly local pizza parlor to frequent. Students were encouraged to spend time by themselves and in small groups. "We didn't want them trooping around like Caesar's legions," said Clark.

Some found it difficult to adjust. Several of the most eloquent passages in students' journals concern their responses to isolation. "Curiously and lamentably," wrote one student, "I have not found a sense of release here; there is too much bustle without and within. I have uncovered an odd thing about myself; I thrive on contention...I am not a peace-loving creature."

Many of the journal entries concern the works being read or considered in class. They reflect the students' efforts to consider the material not only on its own merits, but compared with their own experiences in the woods.

In keeping with the idea that the learning experience can be consonant with the entire lifestyle of the camp, classes are often held spontaneously. On the way to visit a dairy farm in Maine, for example, a group stopped to hold a discussion of Hawthorne on the lawn of the capitol building in Augusta. "The discussion of Hawthorne, the dairy farm, and the trip itself all fitted harmoniously into certain overall concerns for pastoral form and substance," said Clark.

Both Clark and Howes stress that students were very aware of their special status in New England. They quickly came to understand that they were not really rural; that their roots were in the city. "We were still tourists in Wolfeboro, which bills itself as the oldest resort town in America," said Mitch Meyer. "We didn't have to earn a living in an area which is really quite poor; we existed in somewhat contrived circumstances. I loved watching spring come to New Hampshire, but I could never hope to understand what it means to a native, resident New Englander."

Clark agrees with his students' assessment. "We were able, gradually and through our own experiences, to come to an understanding of the difference be-

> "One of the legacies of the sixties that shouldn't be forgotten is that experience and learning can often proceed side by side. A key question, however, is how to make such programs accessible to students. The intelligent part of this program is their confronting the problem that students with money and/or leisure can take advantage of such opportunities and others can't."
>
> *Kenneth E. Eble*
> *Department of English*
> *University of Utah*

Learning experience:
New England Literature Program. No prerequisites. Enrollment: 25.

Other descriptions:
"Literature and the American Wilderness," *Yale Alumni Magazine*, February 1976.

Contact:
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Anne James

Outdoor classes are a standard feature of the New England Literature Program.

tween a pastoral experience (which ours was) with its essentially urban background, and the rural life of earlier New England inhabitants," he said. Alan Howes also points out that the program helped give students new perspective on their college education. "We hoped that our students would come to see that what was happening in Ann Arbor was not so different from what could be made to happen in New Hampshire. We hoped that students would return to the university refreshed and with a renewed enthusiasm for what it had to offer," said Howes.

Clark and Howes initially thought the program would be ideal for students at the end of their freshman year, but admit now that their views were too narrow. The original participants came from a variety of levels and disciplines. There was even a graduate student from the School of Music; fewer than half of the students were freshmen. "While we didn't find any reason to change our minds about the usefulness of the program for freshmen," said Clark, "we now believe it has just as much to offer older students. The students who got the most from the experience were often those in their senior year or those who had dropped out of the university to work for a while and had come back."

As a result of the broad mix, participants get a chance to know well students they might never have encountered in Ann Arbor. At the university, where most students live either in enormous dormitories or in isolated four-person apartments, students tend to associate only with the people they live with and those in their own field.

The program imparts to students far more than simply a love and understanding of New England and its literature. What it attempts to teach is difficult to measure in terms of academic credit. Clark and Howes share a somewhat old-fashioned respect for liberal arts education in its broadest sense. The New England Literature Program, therefore, includes far more than just reading, writing, and discussions. Noncredit instruction in canoeing, camping, climbing, hiking, sailing, and cooking are also part and parcel of the program. "We want students to become competent and assured of their ability in these areas," said Clark. "We found last year's students amazingly receptive to this concept. They broadened their notions as to the nature and aims of liberal education; the nonacademic activities served to create an aura of competency and adventure that overflowed into the study of literature," said Clark.

Clark was amazed that so little discipline as such was required. "We did have rules about water safety and drugs," he said. "But most of the rewards were inherent in the program. There was never a need to employ sanctions." One reason may be the small size of the group, which makes for strong communal ties.

A New Approach to Communication

When the chairman of the English department at Drake University in Des Moines, Iowa, gave Mildred Steele the task of developing a communication course for upperclassmen, she faced the challenge of creating a new approach to the subject. Such courses are usually rhetoric classes for freshmen and sophomores or courses in applied communication skills for career students in two-year colleges.

Steele's course combines the theory and practice of writing with speaking and nonverbal communication skills. But she couldn't find a text that did the same. Finally settling for Jean M. Civikly's *Messages*, along with *The Elements of Style* by Strunk and White, she found it was still necessary to create approximately 40 additional handouts of her own.

Basically, Steele seeks to develop fundamental communication skills, through empathic listening and response, working successfully in small groups, having command of problem-solving techniques, and being able to analyze and rectify communication breakdowns. The course also discusses many theories of communication that are tested in practical exercises using reading, writing, lecture, discussion, projects, role playing, and media presentations. Each skill and theory is approached from the perspectives of content, methods, and feelings. Finally skills and theories are applied to many problems of communication, including listening and response, small-group dynamics, self-disclosure through free writing (all students maintain journals), nonverbal activity, dialects, mass media, business management, and problem solving—all of which, Steele suggests, pertain to the problem of human liberation.

Students make, observe, and respond to a variety of class presentations, some of which are given by guest speakers. Steele also requires each student to select two projects from six options. One project must come from the following three: participation in a writing workshop, giving an oral report on a communication project, or taking an hour-long exam on course material. The second project must come from another choice of three: two written and one oral report on reading in the field of communication, a communication

The program has neither a midterm nor a final. Instead, Clark and Howes examine the journals after three weeks (skipping those sections that students wish to keep private), and make suggestions about ways in which students can expand their explorations and improve their prose. At the end of the six weeks, they examine the journals again. In addition, in a half-hour oral examination each student is asked to discuss the implications of what he or she has been doing, and to make overt connections between the literature read and the other experiences of the six-week period. Finally, students are expected to produce a written self-evaluation. Clark and Howes do give grades. In the first year, all the students received high grades. "They all deserved them," said Clark.

In 1975, the six-week program cost students the normal tuition for a half-term, plus $480 (what students would ordinarily pay in Ann Arbor for room and board) to cover round-trip transportation to Wolfeboro, room, board, transportation for a number of trips, books, laundry, and a few extras such as money for visiting lecturers. The figure does not include personal expenses, but these are very light. According to the Michigan scholarship office, the $480 sum is well under what a scholarship student would be asked to budget for an eight-week summer session. Students, therefore, can earn the same number of credits they would in an eight-week period and still earn an extra two weeks of pay at a summer job.

Nevertheless, many students at Michigan and elsewhere are increasingly hard-pressed to pay for their college tuition and personal expenses. Many now work the entire summer as well as part-time during the academic year. This has tended to depress interest in the program. "I would love to go to New Hampshire again," said Vicky Price, a geology major, "but I really have to work all summer just to pay for next year. I know a lot of my friends are in the same boat."

In 1975, the program attracted 20 students; in 1976, 18 participated. Cost is a big factor, but student uncertainty about the nature of the program may also limit applicants. Clark and Howes would like to broaden participation. There have been no students from minority groups, for example, in either year's session.

For those who participated there is little doubt that the program was extremely successful. All but one of the 20 original students came to a fall reunion. Two of them went back to New Hampshire for the second session as staff; others have asked about the possibility of returning to study further. Clark and Howes also note expressions of interest from fellow faculty members and administrators.

Jay L. Robinson, chairman of Michigan's Department of English Language and Literature, believes that Clark's fledgling effort is needed in a university like Michigan. "The multiversity has not proved a hospitable locale for liberal arts education," wrote Robinson. "The size of such places has tended to separate students from nonacademic environments, and tendencies toward specialization have made the integration of subject matters difficult." It was in order to counter tendencies and situations like these that Clark initiated his experiments in residential, on-site education.

Robinson also has praise for Clark as a teacher. "Professor Clark is a key figure in these experiments, not merely as organizer but as philosopher and teacher. More than anyone I know, he is concerned with education that changes people—not in ways described by the terms of behaviorists, but in ways described by the habitual terms of estheticians and moral philosophers.... His experiments are likely to bring change."

Because much of the program is so intimately dependent on Clark and Howes—on their love and knowledge of New England, of the subjects and students they teach—it is difficult to predict whether other institutions could successfully emulate the program. Still, the concept of integrating the literature of an area with the environment in which it was created seems natural, and it deserves a broader audience. ■

research paper, or an essay derived from the student's journal.

Steele's desire to communicate effectively has led her to compile lengthy syllabi for all her courses. The one she has written for Communication runs 18 pages. She describes in detail what each class session will cover, spells out each assignment, describes all exams, and explains how the various components of the final grade are weighted. She also includes a list of optional assignments with space for a student to record his choices; a Record of Progress to help the student chart his growth; a two-page list of the crucial factors in effective communication; a single-spaced four-page bibliography; a diagram of the points at which communication can break down; and the details of Steele's availability: her office hours, phone numbers, places to leave messages—even a map showing how to get to her office.

Steele has taught two sections of the three-hours-per-week course each semester. Enrollment is limited to 40 in each section (though she prefers no more than 35) and there is always a waiting list. Asked to evaluate various aspects of the course at the end of each semester, students have given Communication an 8.73 average overall, on a scale from 1 (low) to 10 (high). At the end of the most recent semester, Steele reports, nearly half her students asked for information about other writing courses.

Students report that their work in Communication helps them in other courses, and there appears to be evidence supporting this. Steele began teaching Communication in the spring of 1974 and within a year, the faculty of Drake's College of Business Administration had noted such an improvement in the work of students who took the course that they added Communication to the list of electives that can be counted toward a business administration major. In addition, the director of Drake's career planning office believes that the practical skills Communication teaches can help all students—in liberal arts or career training—to enhance their employment opportunities.

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A Whodunit Approach to the Freshman Research Paper

When W. Keith Kraus received the Shippensburg (Pennsylvania) State College distinguished teaching award in the summer of 1975, he was cited in particular by the awards committee for "the use of murder mysteries as an innovative method of teaching research procedures...in such a way as to interest his students in the actual process of research." Hardly the run-of-the-mill research topic, and considered by some of his colleagues to be "lacking in high moral seriousness," a good whodunit from the murky past seems nevertheless to Kraus to be the best available incentive for a class of freshman students who not only lack the skills necessary to write a research paper, but are generally devoid of any eagerness for the experience.

It all began, as the inspector might say, a few years ago, when Kraus became aware that the research-style term paper routinely assigned in second-term freshman English classes often turned out to be little more than "a boring chore, resulting in a badly written paper which discourages students." Seeking to relieve the boredom—his own as well as the students'—and to inject a sense of excitement and a feeling of enjoyment into the writing of freshman term papers, Kraus compiled a list of notable murder cases cited in the *New York Times Index* since 1851. Giving each student only the name of a victim and the date of death, Kraus then asked for a 2000-word paper on the crime.

The results were little less than astonishing. Students responded with enthusiasm to the challenge, and delved into research materials with unusual zest. There were no identifiable instances of plagiarism, no scissors-and-paste jobs, no pleas of "I couldn't find out anything about the topic." The papers were thoroughly researched, carefully thought out, and clearly presented. And the students had fun while learning some valuable research and writing skills.

Now using this method for assigning all of his freshman research papers, Kraus seeks minor historical events that were popularized in the press at the time of their occurrence, but are now forgotten. A typical murder case to be selected would be one that was big enough to generate a lot of publicity in the newspapers and perhaps the popular magazines of the time, but not so big as to have been the subject of a book. Cases are chosen that unravel over a period of years, so that new developments kept occurring to cloud the issues and

The Writing Lab: Serving Students and the Community

In the fall of 1972, Mary K. Croft, an assistant professor of English at the University of Wisconsin at Stevens Point, sent to the dean of the College of Letters and Science a memorandum that began: "My work with the freshman English exemption program for the past two years has reinforced my observations about our incoming students. They can't write! And many...still have serious deficiencies after completing our basic composition courses. Some kind of additional,...intensive, personalized help is needed...."

There followed a plan for the form that help could take, who could benefit from it, and how it could best serve the interests of both the university and the surrounding community. Given immediate and strong support by the dean for a multi-purpose writing laboratory, Croft recalls how just three months later "one graduate assistant and I opened the door to our lab—a small, windowless, gray-walled room made bright with posters and pictures and plants."

Three years later, and in larger and more attractive quarters, the writing lab is a firmly established and heavily utilized facility of the English department, serving the needs of that department as well as those of the rest of the university, the community at large, and the state of Wisconsin. Users of the lab have nearly quadrupled in number from the early days of its existence, while total visitations per semester have increased almost sixfold. Three faculty members now devote significant portions of their time to the lab, assisted by four graduate students.

Only about one fourth of the students who use the lab come in by referral from faculty members urging (or requiring) them to seek help on their writing skills. They are offered an assessment of their needs and an individualized program for improvement of their skills. The other three fourths enter the lab of their own volition—some making regular visits over an extended period of time, others dropping in only once or twice. All users of the lab are encouraged to return as often as they desire, and casual visitors are not discouraged from making use of the facility on a drop-in basis to deal with specific writing problems.

Culturally or educationally disadvantaged students, many of them minority-group members, are given priority at the lab and treated in a warm and personal manner that helps to overcome the reluctance such students often feel toward seeking help with their academic problems. Care is taken to avoid the critical manner of helping to which these students have often been exposed in the classroom, and an effort is made to provide a comfortable learning experience through supportive peer tutoring under faculty supervision. Students chosen to serve as peer tutors—those who have an interest in the teaching of composition and have demonstrated superior writing ability—are given intensive training both prior to and during their work in the lab. Apart from helping to staff the lab (there are currently nine such tutors), these students gain valuable practical experience in teaching writing, and inevitably their own skills improve in the process.

The lab has become host to a varied clientele. Students seeking admission into teacher training or other programs of the university's College of Professional Studies come to the writing lab for help in meeting minimum English requirements. They are given evaluative tests of their writing abilities and then supervised in a program of improvement up to the point of their acceptance into the college.

Foreign students seeking help with English as a second language are wel-

tangle the thread. The point here is to challenge the student to organize scattered and even chaotic information into a coherent scheme.

There is also an attempt to select cases that reflect in some way the period of their occurrence and that throw light on local or national moods, attitudes, and customs. A gangland murder, for example, may reveal in its untangling much about the flavor of the milieu in which it took place—about police effectiveness and corruption, rivalries in organized crime, and public interest and reaction.

Finally, Kraus seeks cases that seem interesting, provocative, perhaps bizarre—cases that will be challenging and fun for students to investigate and puzzle over. Where a case is unsolved, the student is invited to construct his own solution and these are often ingenious and convincing. Murders constitute the bulk of the topics, but students are also assigned papers on political scandals, espionage cases, treasure hunts, and other colorful historical events that spark student interest and offer the challenge of an exciting investigation.

In order to prepare the students for the task, a library tour is arranged at the outset of the course, during which they are introduced to such research materials and equipment as the *New York Times Index*, the *Readers' Guide to Periodical Literature*, and the microfilm readers. Class time is spent on problems encountered in research and on difficulties arising from the use of footnotes and quotations.

The success of this new approach to freshman composition is reflected in the comments of the Shippensburg awards committee, which noted that "student response is excellent in a course that is traditionally dull," and that the student papers reviewed by members of the committee showed "a thoroughness, an interest, an excitement in research not demonstrated in many other instances." Largely for his creative treatment of the freshman research paper, Kraus has been awarded a distinguished teaching chair by the Commonwealth of Pennsylvania, and has also received high recommendations by former students urging incoming freshmen to take the course. "And most important of all," notes Kraus, "I enjoy reading the papers."

For more information: W. Keith Kraus, Department of English, Shippensburg State College, Shippensburg, PA 17257, (717) 532-9121.

come, as are handicapped students whose disabilities have resulted in unusual writing difficulties.

Graduate students come for help in the editing of their theses as well as for explanation of the mechanics of footnoting and bibliographical notation. And even faculty members have made use of the lab: some for help in preparing a paper for publication in a scholarly journal; some for assistance in reducing their academese to straightforward and appealing English prose; others for help in preparing more effective examinations and handouts for use in the classroom.

From inside and outside the university, a diverse array of people have arrived at the lab for a wide variety of purposes: a historian preparing a paper for presentation at a historical society convention; a departmental secretary striving to bring cohesion and readability to the minutes of a staff meeting; a graduate student seeking to translate a seventeenth-century comedy from her native Italian into idiomatic English; a seventh-grade pupil from a local school entering an essay contest. All have been welcomed; most have been helped to their satisfaction.

Along with the institution of the writing lab, Croft has worked with other English department members to develop a number of innovative writing courses, some of which operate in conjunction with or through the lab. These new courses include Development English (a flexible alternative to first-term freshman English), Independent Writing (for anyone from foreign students seeking to Americanize their English to housewives editing organizational reports or newsletters), Teaching of High School Composition (for experienced teachers as well as graduate and undergraduate students), Editing and Publishing (offering practical experience in the preparation of manuscripts and production of books), and a Practicum (offering advanced students practical experience and college credit in return for tutoring services in the lab). One significant effect of this enrichment of the departmental offerings has been to make possible a minor in writing, which has recently been adopted and is meeting with considerable interest.

In addition to its primary work in direct tutorial assistance and involvement in a program of innovative writing courses, the writing lab acts as a repository and resource center for materials in varied media on writing and the teaching of writing, and as a model for other schools seeking to establish a similar facility. The lab provides teachers and speakers for off-campus presentations, in-service programs, panels, workshops, and consultations. In the lab itself, programs are held in which noted writers or writing specialists talk informally with students who crowd the facility to hear them.

There can be no doubt that the lab works. Students who use it exhibit improved communication skills and attitudes in the classroom and recommend it to their peers. Instructors increasingly refer their students for advisory assistance and counseling with respect to specific writing problems as well as for direct tutorial aid. And the lab staff finds excitement and gratification in their work and in the spontaneous expressions of gratitude from those they help. "It may be," muses Croft, "that this particular writing laboratory is a singular, happy accident; but we have seen the beginning of this same kind of glow whenever our staff has carried the idea to other schools. We believe we may be finding a new way."

For more information: Mary K. Croft, Department of English, University of Wisconsin, Stevens Point, WI 54481, (715) 346-3568.

How to Survive in College

Charlotte P. Mecke's course How to Survive in College attracts students ranging from dropouts to holders of advanced degrees. The nine-week course, taught since 1971 at Orange Coast College in Costa Mesa, California, is so popular that there are four sections with approximately 25 students in each, and all four are offered four times a year. Because Mecke's appointment is in the English department (she holds a master's in English and American literature as well as one in counseling and guidance), How to Survive in College is nominally an English course. But while it covers language skills (reading, writing, listening, speaking), it is equally concerned with psychology (giving the student a positive self-image, self-awareness, and the ability to establish productive interpersonal relationships).

Believing that organization is the basis for all skills, Mecke demands that students precisely organize their time and materials. Regular attendance is compulsory. After three absences, a student is invited to a conference to discuss his or her commitment to education and whether or not he should be allowed to complete the course. Tardiness is also frowned upon and no late assignments are accepted. There are no grades; a student is given credit only if all assignments are completed. One on-going assignment: daily entries in a journal in which students record personal growth. Mecke reads every journal and gives each student extensive written comments, providing for a continual teacher/student dialog.

Focusing on process as well as content, Mecke tries to break down stereotypic teacher/student behavior, emphasizing that students can learn from one another. Chairs are rearranged constantly (some days they are not used at all). Everyone addresses everyone else by first name only, and Mecke insists that all sentences begin with the first person—forcing students to take responsibility for their own opinions, observations, and feelings.

Students are taught how to take notes and how to listen. They are taught a five-step memory process (intend to remember, react actively, refresh your memory constantly, attach what you want to remember to something you already know, and write it down) and how to survey, question, and read a book. After presenting a study skill, Mecke follows it up immediately with a learning game in which the technique is applied. She teaches students how to take exams and how to tell from subtle changes in an instructor's body language when he or she is discussing material that will be on an exam. Students study yogic breathing, akido centering, Edgar Cayce head-neck exercises, and meditation.

There are mimeographed handouts in the course but no assigned texts. A list of recommended readings includes *The Massage Book* by George Downing, *Psychocybernetics* by Maxwell Maltz, and *I'm O.K.; You're O.K.* by Thomas Harris.

Mecke claims that by the fourth week of her course students' body language has changed completely. Frowns, lowered eyes, tense shoulders, and slouching postures have all disappeared. She estimates that by the end of the course 75 percent of her students go on to earn straight A's, even after transferring to senior colleges (where many tutor new roommates in Mecke's techniques). Other members of OCC's faculty report to Mecke that they can always spot her students by the way they handle themselves in class, and a few have even sat in on classes to learn her techniques. "I used to care more about the course content than the students," Mecke says. "Now I care more about the students."

For more information: Charlotte P. Mecke, Department of English, Orange Coast College, 2701 Fairview Road, Costa Mesa, CA 92626, (714) 556-5594.

Orienting the Prospective English Teacher

As a more complete orientation to the teaching profession, Alan B. Howes of the University of Michigan, along with his colleagues Walter Clark and Margaret Lourie, has developed a Professional Semester Program of unusual intensity, characterized by a high degree of student involvement in the planning and evaluation of the program, an integrative approach to five distinct subject areas, and concentrated periods of classroom observation.

Team taught by two instructors who remain with the program throughout the semester, students meet for 14 hours each week in 2-hour blocks. In the middle of the 14-week semester, 5 weeks are reserved to observe teachers in local high schools. During the weeks of observation, class time is cut to 6 hours per week, allowing students to watch professionals 3 and 4 hours each day, for a total of 60 hours every semester. This is a much more compressed and intense experience than that offered in most programs, and it gives students a more realistic view of the demands of the profession.

The Professional Semester is taught by Howes and another instructor, together with a teaching assistant each fall. Team teaching provides for more open class discussion by giving students the chance to hear alternative or supplementary views and creates an atmosphere in which all join as equal participants. And the constant presence of Howes and his colleagues, as well as a consistent group of dedicated students—8 in 1974, 17 in 1975 (Howes feels 21 or 22 is the maximum the program can handle)—allows for an increased opportunity for students and teachers to learn from one another.

Through integrating topics, the semester provides an alternative way to satisfy the heart of the requirements for the secondary teaching certificate in English. The subject matter components were chosen to allow students to receive transcript credits for five existing courses (Introduction to Modern English, Intermediate Exposition, Studies in American Literature, Teaching of English, and Practicum in Teaching Methods).

Students are given the tools for linguistic analysis. They discuss attitudes toward language and the interrelationship of rhetoric and writing. A number of formal and informal papers are written and students analyze what they've gone through dur-

Teaching the Form and Content of Poetry

Sara deFord of Goucher College in Baltimore has been teaching The Study of Poetry for 30 years and finds the rigor just as effective today as it was in 1947. Brooke Peirce, chairman of Goucher's English department, says he considers the course in the same league as "the lectures of Billy Phelps at Yale, Kittredge at Harvard, or Stringfellow Barr at St. John's. It is the kind of experience out of which legends are made."

The course, limited to 20 upperclassmen, meets three times a week. During class deFord concentrates on formal elements, seeking to illustrate how form interacts with content. She begins with rhythm and presents examples of effective verse along with those of ineffective verse. Students are assigned poems to read combined with daily written exercises designed to help them analyze formal aspects of the reading. Class discussion centers on what the students have learned from doing the written exercises.

At the end of studying each new form, students are required to write their own poetry using that form. Their efforts are then discussed in class as if each were a poem by a major poet. This, notes deFord, "almost invariably results in deep appreciation of the skill of major writers." Moreover, students usually change their minds about poets whom they had failed to appreciate in the past. "The best example of this reversal," deFord continues, "is the evaluation of Pope's couplets, usually despised by students as mechanical and platitudinous—but not after they have tried to write one effective heroic couplet."

From rhythm, the course goes on to rhyme (both accurate and variant), and then covers five-foot rhyming couplets, four-foot rhyming couplets, quatrains, sonnets, French forms, odes, and free verse. Students study not only final versions of established poetry, but earlier drafts as well from such poets as Keats, Spender, and Housman, noting in particular the different effects obtained from alternative words and phrases ("To be or not to be? What shall I do?"). Students study the effects of alliteration and assonance, and they make lists of imagistic words in poems, after which they attempt their own imagistic verse.

The syllabus is quite detailed about what students are expected to do from class to class, and deFord makes class discussion equally precise to show why they are doing it. The text for the course, *Forms of Verse*, was written by deFord and her colleague Clarissa Lott. Letter grades are never applied to students' exercises, but deFord always appends detailed comments suggesting how successfully each student's efforts meet the course's standards.

DeFord, herself a published poet, is exclusively concerned with communicating that "poetry is a combination of form and substance, not substance alone," and she always allows students to arrive at their own responses to poetry. Thirty years' worth of comments from graduates indicate that they have absorbed her insights and continue to benefit from them, both in later courses and in reading for pleasure after they have graduated.

Student-poets also benefit from their discovery that there is as much (and usually more) discipline as there is pure inspiration in successful poetry. Throughout the semester, deFord willingly reads and comments on any independent efforts students care to show her, and she nearly always sees their poetry mature. The rewards of the course, deFord comments, "are apparent to our graduates who have become high school and college teachers, publishing poets, and members of the cultural community which reads, hears, and enjoys poetry."

For more information: Sara deFord, 1995 South University Avenue, Denver, CO 80210, (303) 722-7647.

ing the writing process. They apply various theories of rhetoric and discuss their potential usefulness in high school teaching. A balance between theory and practice is achieved by working with actual high school students' papers.

While focusing on literature, students sample various approaches to texts, seeking to separate those which make literature stimulating from those which render it stultifying. They go beyond traditional literature to study films, ethnic writing, comic books, and songs, and analyze such texts as *The Invisible Man*, *As I Lay Dying*, and *Beyond the Melting Pot*.

As part of the discussion of teaching methods, students take field trips to media centers and to reading, writing, and film labs. In addition, they train and qualify for certification as operators of audiovisual devices. For the five weeks of classroom observation, students are paired wherever possible with courses and schools which most reflect their interests. Students also meet for at least one two-hour class each week to discuss what each has observed.

No final exam is given. Instead, the students write self-evaluations and engage in a session in which the whole program is evaluated and discussed frankly. In fact, all participants in the program evaluate it constantly. Because of the opportunity to respond to the material and to plan future classes, student motivation tends to be very high. Students understand what they are doing and why, since they have a hand in the decisions. Also, the program's goals are constantly discussed and, when necessary, revised. Students find the program so stimulating that they have organized extra class sessions on their own time and have even reassembled for discussion after completing the program.

Howes has made no formal study of the program's ultimate impact, but he has seen enough of its graduates to feel that, in addition to maintaining group identity, students continue to learn in the reflective, integrative patterns established during the semester. So far, only two students have decided teaching was not for them. The rest have found their interest confirmed and deepened.

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POLITICAL SCIENCE

POLITICAL SCIENCE AND POLITICAL LIFE

by Evron M. Kirkpatrick and Sheilah R. Koeppen

There is too little excellent teaching. The reasons are not hard to find. Good teaching requires careful thought and extensive preparation. Good teaching is hard work. Yet today there is at least increasing concern with improving teaching, with finding new teaching methods, techniques, aids, and materials. This is true in all disciplines; political science is no exception.

It is not the intent of this essay to explore in detail what is being done or what ought to be done, but rather to concentrate on two contributing difficulties. The first is the immediacy of the relationship between the subject matter of political science and the world it deals with. Everybody knows about politics. People read about politics in papers and news magazines; they hear about politics on the radio and television; it is the subject of conversation with family and friends. It evokes strong feelings and leads to inflexible opinions. How then does the substance of political science differ from what people receive from these many sources? How does it differ from the daily news and daily gossip? How can students be freed from their fixed views? The student of physics knows very little about the field when he takes his first physics course. The beginning student of politics knows a great deal, and much of it has to be unlearned before he can gain more adequate knowledge. The trouble is not that he doesn't know anything, but that he knows too much that isn't true.

All disciplines have to establish channels for introducing research and new information into their programs. But for political science this mission has an added imperative. Not only must the conscientious teacher be knowledgeable and up to date in his field, he must also be aware of the current events that bring about changes in the institutional and personal processes that his course focuses on. Texts and professional journals cannot keep pace with events. Hence, the political science teacher must also assess and make judicious use of newspaper and media reports in teaching the theories of political science. The opportunities and the pitfalls of relating scholarship to current issues are felt keenly by political scientists.

A second major difficulty confronting the teacher of political science is not unique to this discipline. It is the dilemma of how to contribute to a sound liberal edu-

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cation, while at the same time providing career-related study. Much more hard thought should be directed to this question. How different is a professional from a liberal education? Can the two be combined? How? If they are separated, what is included in the one and what in the other? Certainly no one can make political scientists out of undergraduates whose professional careers will be in medicine, law, engineering, business, physics, or mathematics. What should be done for them? What can be done for them? How should it be done?

These are the questions political scientists need to ask when they make decisions about course offerings and when they advise students. Subfields of the discipline do introduce undergraduates to the skills, policy issues, and ethical principles they will need in choosing a career and pursuing professional training even outside the discipline. For example, the analytical skills taught in conjunction with courses on methods of political behavior analysis are required for many staff and managerial personnel in public agencies and business enterprises. Public policy courses are important practical and substantive training for engineers, scientists, prelaw and premed students. Constitutional law courses are important for prelaw students; and in fact, many master craftsmen in the art of teaching are constitutional law professors. Political philosophy and political theory are important, not only for a liberal education, but also for preparing students to execute professional tasks ethically and responsibly throughout their lives.

Such questions demand priority attention. Discussions of techniques, pedagogical method, and materials can be resolved only after teachers have addressed themselves to the issues of what to teach and to whom. There are instructional methods suited to the various specializations in political science: internships and field work, personalized and peer instruction, data analysis exercises, simulations and games, and, of course, lectures and seminars. Teachers ought to be provided with training in and information about alternative instructional techniques, strategies, and materials to enable them to develop and evaluate the instructional methods best suited to their courses, their own skills, and their students' needs. And, most of all, the profession needs to reward adequately those political scientists who give serious attention to central issues and help to resolve them effectively. □

THE SCIENCE IN POLITICAL SCIENCE

by John Egerton

Is political science a science or part of the liberal arts? Are its closest academic relatives philosophy and law, or journalism and sociology, or economics and mathematics? Is it—and should it be—descriptive or prescriptive? For as long as there has been a discipline called political science—some say since the days of Plato and Aristotle—students of politics and power have been debating those questions. And the debate continues without resolution.

The boundaries of political science are imprecisely marked and its interior territories as diversely governed as the nation-states its scholars study. The discipline has been shaped and structured more by its evolving membership than by any external set of exact laws or any ancient philosophy. Before the advent of computers and other forms of modern technology, the art-science debate in political science was more academic than specific. The term "science" as it was then used pertained not so much to method as to attitude; it involved disinterested inquiry rather than formulas and measurements. Now, however, the term is often meant literally. Quantitative measurement and statistical analysis are now thought to be essential tools in political science research.

However much the methods of science have permeated the study of politics, it seems apparent that most political scientists, by training and inclination, still view their discipline as belonging to the liberal arts. As a quick glance at almost any department's course offerings makes clear, comparative studies of political philosophies, systems, and institutions dominate the fare; courses emphasizing scientific method and technique do not. Nevertheless, almost every college and university department of political science does offer a few of these courses—in public opinion analysis, for example, or in research methodology—in order to equip its students with the basic techniques and paraphernalia of quantitative research. At Vanderbilt University, one such course is PS 201: Political Inquiry, an introduction to "concepts and procedures of scientific investigation in politics."

Political Inquiry has been a fixture in the Vanderbilt curriculum for many years. It is required of all political science majors, the only course in a list of about 30 that every undergraduate in the department must complete. For the past eight years, in every semester save one, it has been taught by Richard A. Pride, who is now, at 33, a tenured associate professor. During his advance from the rank of instructor, both he and the course with which he is so closely identified have acquired an ambivalent aura. The same adjectives are often used by students to describe the man and the course. Both are feared, respected, disliked, enthusiastically praised. The words of one student, written on an evaluation form, are appropriately typical: "Must political science majors know this nonsense?" he asked, adding: "If this course has to be taught, it's damn well Pride teaches it!"

On the surface, at least, there is nothing extraordinary about the way Pride teaches the course. In the organization and presentation of his material he follows the traditional path of the teacher—lectures, discussion, labs, individual counseling, standard forms of testing and assessment. He has, by the force of his personality, put his personal stamp on the course, but the emphasis is on effective teaching and not on different or innovative techniques.

Beneath the surface, however, the coming together of Pride and his students around the subject matter of PS 201 frequently produces a creative tension not commonly found in undergraduate classrooms. It is perhaps inevitable that he should arouse mixed feelings among his students and, at times, among his colleagues. He is a complex man teaching a complex course in his own distinctive way; a disciplined, demanding, driven individual, pursuing excellence—in himself and in his students—with single-minded intensity.

The content of PS 201 is peppered with scientific concepts and techniques. It requires a working knowledge of computers and a familiarity with statistical analysis. It has to do with quantitative research, with theory and hypothesis formation, with interval data, ordinal data, and regression analysis. The workload is heavy and the pace is swift, culminating in a term paper of original and quantitative research. All in all, the experience is viewed by many students as fearsome and formidable, a dreaded trial by fire. And Pride is typecast as the department's Mr. Methods, the heavy, the cold-eyed analyst doing a necessary but unpopular task.

But appearances are deceiving. Far from being an impersonal taskmaster,

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he continually tries to "read" each of his students, to determine their interests and capabilities and to tailor his responses and demands accordingly. The standards he holds before them are the same high standards he requires of himself—hard work, seriousness of purpose, and mastery of the subject. In spite of his adherence to the scientific method—and by implication his devotion to it—he is in fact critical of it and skeptical of those who would assume that anything can be measured. In the end, his purpose is to develop not scientists but independent, self-motivated thinkers who understand science and know how to use it. What he seeks to nourish in his students is a critical perspective of the processes and a creative application of the skills. In short, his objectives seem more characteristic of the liberal arts than of the sciences.

Nevertheless, Pride is unyielding in his insistence that every one of his students produce a completely independent and original piece of research, and it is that requirement more than anything else that does in fact separate outstanding students from ordinary ones and distinguish the course from others in the department's curriculum. "The research paper is the key," Pride says. "The entire effort—the idea, the hypothesis, the data collection, the analysis, the final paper—must come from the individual student. There's a terror in that for some, but there's also a joy in the accomplishment."

Most of his students, Pride says, "see political science as a preparation for law school, or perhaps journalism or government service. They tend to be uninterested in science, statistics, computers, the whole positivistic approach. Many faculty members, on the other hand, see political science as a professionally oriented discipline leading to graduate school, to the PhD. But not all of us have a keen sense of what the discipline is; it's very eclectic and the boundaries are not distinct. What I'm mainly interested in is getting undergraduate students to recognize their talents, to attain something beyond the requirements, to reach out and do something they didn't think they could do."

As for quantitative research, Pride believes his students have to grasp it because it has become so basic to political science. "My job is to give them a handle on technique, a feeling for the substance, so they can see the virtues and the limitations of social science research. They need to be able to use it and understand it, but not be fooled by it. I also want them to learn that social science inquiry can be a very creative process. I'm not trying to make them into professional political scientists, into academicians. I just want them to be able to define problems they're interested in, ask the right questions, marshal the evidence, reach sound conclusions, and put them to use. I'm not a superquantitative type—but I'm intent on getting them through this."

The best research papers his students have produced combine gut interests and originality. "Many schools teach students quantitative techniques, but allow them to use secondary analysis—other people's data. In this course, the data collection and quantitative measurement must be original. Measurement is the great challenge of social science, and students in this course are required to confront unique measurement problems in their papers." As examples of some of the best papers his students have produced, Pride cites the following:

- an analysis of certain key votes in the Ninety-fourth Congress to determine whether political ideology, more than any other factor, explains why some members of Congress support environmental legislation and others oppose it;
- a comparative analysis of four pretrial release methods in criminal court cases, to determine whether bail bonding is more or less effective than the other methods;
- an examination of individual votes and personal characteristics of legislators to determine why the Tennessee general assembly ratified the Equal Rights Amendment, and then rescinded the ratification two years later; and
- a systematic examination of the Watergate transcripts to measure the progression of psychological instability in the words and actions of the participants as the pressures of disclosure increased around them.

Pride characterizes Vanderbilt's students as "intelligent, ambitious, and tremendously talented. But their propensity is to sit back, take notes, and please the professor. They're very grade conscious. Most of my students want into law school in the worst sort of way; they know that every grade counts, and they work for that. That bothers me. They're unwilling to take risks. Yet I feel that risk taking is one of the best ways for them to realize their potential."

Reluctantly, Pride grades his students: "I don't like to, but it's important—the students need it, the university needs it. And I can do it; I can recognize quality. Evaluation is very difficult, though. On exams I sometimes ask questions not directly related to the material we've covered. Some students think that's unfair, but my intent is to make them apply what they've learned. I want them to show the ability to think for themselves, to show growth, not just mechanical thought. They need to know a lot from me, but a lot has to come from them, too. There is a need for ambiguity; there has to be room for creativity. I'd have to say there is some tension between my views and theirs on these things."

As seriously as he takes his evaluations of his students, he takes their evaluations of him. The students make such judgments at the conclusion of the course, and they have other opportunities to express themselves anonymously. From those records, a predictably mixed picture emerges: "He pushed me, made me work and grow"..."too heavy a workload"..."best experience so far"..."brilliant but hard to get along with"..."demanding, critical, one of the best professors"..."exciting to work with a professor who is so caught up in what he's doing"..."too much expected."

> "The uniqueness of this course is that it is not directed so much at the establishment of an exclusively scientific epistemology as at an understanding and application of the rigor of scientific analysis in general, and the potential uses and limitations of quantitative methods in particular."
>
> *William C. Havard*
> *Dean, College of Arts and Sciences*
> *Virginia Polytechnic Institute and State University*

Learning experience:
Political Inquiry. No prerequisites. Enrollment: 20. Required of majors.

Similar programs:
Many universities have research methods courses; however, few are required and few require as much of the students.

Contact:
Richard A. Pride, Box 83-Station B, Vanderbilt University, Nashville, Tennessee 37235, (615) 322-2461.

"The evaluations cause me to alter my behavior," Pride says. "I have modified the course somewhat over the years—pared down the reading assignments, things like that. And if I could, I'd make it a two-semester course. Maybe it would be sound, realistically and intellectually, to require less of them. But I want so desperately to have them reach this level, because I know they're capable of it, and I can see no other way to do it. I worry about it a lot. It's a torment. I know I'm not always sensitive enough to their fear of failure. My personality is not entirely warm, and when I challenge them, make demands, set high standards, it's difficult for some of them. They take it personally. I chew some of them out, and take others by the hand and walk them through it, all based on how I read each one individually—and sometimes I fail, I misread them. On the whole, I'd have to say I teach to the brightest students. I get my kicks when they turn in their great papers. I don't like to admit that, but that's the way it is.

"The people who are alive intellectually, the ones who are willing to reach out, to think for themselves, to show that they don't have to depend on me—they're the ones I set the pace by. It's easier to scale down your expectations, to make it more fun. It's easier to be liked. But if it comes at the expense of a diminution of the standards you have, at the expense of bright students who don't accomplish a lot, then you haven't really done your best. And neither have the students; they're the ones who pay the penalty. Maybe my expectations are too high. But they're such good students, so capable and talented. I couldn't teach this way just anywhere. So I do it at very great cost to them and me. It's not always a happy thing."

There are 15 students in PS 201 now, down from a high of about 35 a few years ago. The figure reflects a reduction in the number of political science majors, and is, perhaps, another reason for Pride to be concerned about the rigorous standards he sets. (The fact that political science enrollments are down almost everywhere in this post-Watergate era is very much on the minds of Pride and his colleagues.) Most of the students have had the introductory course in political science and at least one other course in the department. Most of them, too, have come forewarned and forearmed. Midway through the semester, they seem to be holding their own, beginning to relax a bit with the man they were told was so tough.

On a Friday afternoon in late March, the subject is computers. The dreaded research paper looms, and somehow the computer, a foreign and forbidding instrument to most of the students, will probably play a part in it. Pride enters, erases the blackboard, and goes to work. He is soft-spoken, businesslike, unsmiling. "What I want you to see is how simple it really is. Remember, everybody in the computer center once came in the front door knowing nothing, just like you. Disregard the engineers—you've got as much right to be there as they do." Behind his rimless glasses, the slightest trace of mirth shows in his eyes. "No matter what I tell you, you're not going to know what it's really like until you do it." Step by step, he decodes a Fortran statement for

Vanderbilt's Television News Archive: "A Record of Today for Tomorrow and After"

One of the limitations of television is its fleeting image. Unlike a newspaper, which can be kept, clipped, or microfilmed, the words and pictures that appear on the tube quickly disappear and retrieval has customarily been a practical impossibility.

In the summer of 1968, Paul C. Simpson, an alumnus of Vanderbilt University, hit upon the idea of videotaping the news broadcasts of the three major television networks—ABC, CBS, and NBC. With the university's cooperation and with funds raised from private donors in Nashville, Simpson initiated what has become the Vanderbilt Television News Archive. The collection now comprises some 4,500 hours of news programs with about eight hours of tape added to the files each week. A monthly annotated index is published, and the tapes are available for rent.

Public polls and surveys have shown that almost two thirds of the American people get most of their information from television. Surprisingly, though, the networks that produce most of that information tend to keep little or no record of it. Transcripts, logs, videotapes, and audio recordings have not been readily available. The purpose of the Vanderbilt project is to fill that void, at least partially; in the words of a university statement: "to preserve a record of today for the usefulness of that record tomorrow and after."

For a fee of $2 an hour, users may view the tapes in the archive on the Vanderbilt campus. Selected tapes may also be ordered by mail, subject to certain restrictions pertaining to public showing, rebroadcast, and duplication. Basic rental charges range from $30 per hour for compiled materials on a specified subject to $5 per hour for audio tapes. A refundable deposit on the materials is also charged, along with mailing costs and research (above and beyond routine reference work) done by the archive staff. The printed index, with its abstracts of news broadcasts, is sent monthly to about 450 locations around the country. It is currently available free of charge, but a sub-

A student compares NBC and CBS news.

them, frequently interjecting an invitation: "If there's something you don't understand, please stop me."

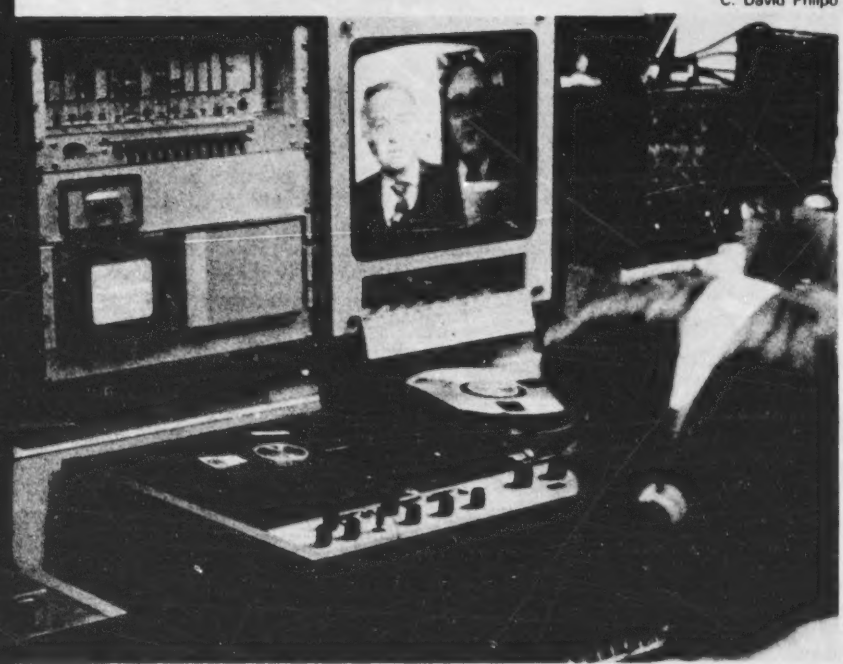
One of the students is Paul Dickson, a sophomore. He says later: "I was told to take this course as early as possible because it's very demanding. It's hard, all right, but he gives you every chance. I think we're learning how to do research, and how to question it. I think I'm doing pretty well." James Powell, a senior, tried the course once before and withdrew. Now he's back for a second shot at it, and after much apprehension is a little more at ease: "I used to resent the fact that this is a required course—the only one—and I'm still not exactly fascinated with the subject matter. But it's not as bad as I thought it would be. I actually enjoy it, really. I'm going to do my research paper on voting patterns in the Arkansas state senate—Little Rock is my home town—and I'm beginning to see how quantitative analysis is essential. I think I've really changed my ideas. I've come to appreciate this approach and how it can be used and abused. As for Pride himself, I'd rate him highly in a good department."

Another student, Ann McDaniel, took PS 201 earlier and is now enrolled in another of Pride's courses—Political Communication. She is using the Vanderbilt Television News Archive (see box) for a research project on Henry Kissinger's media image, and considers what she learned in PS 201 a valuable preparation for her current effort. "Pride kept insisting that we do our own analysis, and not accept other people's studies uncritically," she recalls. "Now I'm doing that and I feel very confident about it. At first, people are a little afraid of him; he demands so much of you, and he can come off as a bit arrogant. But he always says, 'I won't know you unless you come and talk to me,' and if you go to him personally, he's very helpful and supportive. People work hard for him, partly out of fear, but mostly because they want to learn. In most courses, if you don't work, you can still get a C. In his, you'll flunk. I haven't had a better professor, though. The course I'm taking from him now is more casual than 201, more fun. I really feel very good about it."

Back in his office, Pride reflects further on the Political Inquiry course and his handling of it. There is something almost Puritan about his instincts: Social science research is a necessity; it cannot be evaded; it must be confronted and mastered. "This course is one headlong flight to accomplish a goal," he says. "That headlong flight is what makes the course uncomfortable for some, but if I didn't do it, they wouldn't be prepared to handle the assignment I expect them to do. I want to capture their attention, to arouse their interest. There's a time to lean on them, and a time to make things happy, to relieve the pressure. It sounds incredibly manipulative, but I think that's what teaching is: a willingness to say, 'It's my responsibility to judge where people are and how I can get them to where I want them to be.' And, of course, you can succeed and fail—and I do both."

Despite his misgivings, Pride has compiled an impressive record of success. He is, says one of his colleagues, "a complex guy, not an outgoing person but an excellent teacher. The department wants its majors to master quantitative research; thanks to him, they do." ■

C. David Philpo



scription fee is being considered.

Vanderbilt has kept the networks apprised of the project from its beginning. Neither ABC nor NBC has made any official response, but CBS has expressed disapproval, and in 1973, five years after the tapings were started, the network filed a suit against Vanderbilt in a federal court, charging the university with copyright violation. While there have been lengthy depositions and filings in the case, no hearings have yet been held and no injunctions issued to prevent further taping.

Meanwhile, the service remains available to students and scholars. As a research tool, its potential is enormous. As a supplement to the collections of newspapers and microfilms kept by most libraries, the tapes enlarge the record of the times, and their value appreciates with each passing day.

For more information: James P. Pilkington, Administrator, Vanderbilt Television News Archive, Joint University Libraries, Nashville, TN 37203, (615) 322-2927.

GAMES POLITICAL SCIENTISTS PLAY

by Jean Dickinson

MESSAGE # 39
FROM: USSR
TO: *OIL STATES *CHINA *SYRIA
*EGYPT *IRAN *ISRAEL *USA
SENT AT 13:56 29-MAR-79

SUBJECT: STATE FUNERAL

LEONID ILYICH BREZHNEV, FORMER FIRST SECRETARY OF THE COMMUNIST PARTY, DIED IN HIS SLEEP LAST NIGHT OF NATURAL CAUSES. SECRETARY BREZHNEV HAD BEEN LIVING IN RETIREMENT SINCE 1977. SINCE SUCCEEDING SECRETARY KHRUSHCHEV IN OCT. 1964, SEC BREZHNEV HAS PROMOTED RUSSIA TO A POSITION OF PREEMINENCE IN THE WORLD TODAY. UNDER HIS GUIDANCE SOVIET TECHNOLOGY AND CULTURE HAVE MADE GREAT ACHIEVEMENTS THAT BENEFIT ALL OUR CITIZENS AND WE SHALL REMEMBER HIM WITH PRIDE....

The announcement of Brezhnev's death came chattering over the teletype terminals at seven university campuses. As an opening move in the POLIS Network spring game, however, its significance remained unclear—particularly to the United States team at the University of California's Santa Barbara campus. True, the scenario had hypothesized recent changes in top Soviet leadership, but this "death" announcement—even from "natural causes"—was an unexpected embellishment by the Soviets (in this case, represented by students at Loyola-Marymount University in Los Angeles). Were they signaling, by way of a flattering obituary, that Soviet foreign policy would remain unchanged? Or was this, on the contrary, a subtle repudiation of the Brezhnev regime, a hint of new directions to come?

The Santa Barbara students heatedly discussed the implications of either possibility in terms of game strategy. A change in foreign policy could mean increased stonewalling in the SALT talks. Soviet hardliners were already known to be dissatisfied that SALT had not covered the question of nuclear weapons stationed in Western Europe or the projected American B-1 bomber force. It could also affect the diplomatic crisis hypothesized in the Persian Gulf, where a Soviet naval vessel had collided with a fully loaded Japanese super tanker, releasing some 150,000 tons of crude oil into Gulf waters. And, of course, there might be ramifications in the eastern Mediterranean, where Egypt's movement away from the Soviet Union was considered by some to be a crowning achievement of U.S. foreign policy.

In this instance, the U.S. team decided, quite correctly as it turned out, to interpret the move as a reaffirmation of Brezhnev-era policies. Several days later the team released the following story to the "World Press":

(WASHINGTON, D.C.) PRESIDENT FORD SAID TODAY THAT HE WAS PERSONALLY GRIEVED AT THE DEATH OF USSR LEADER BREZHNEV. HE SAID THAT HE HAD FOUND THE RUSSIAN SECRETARY "GENUINELY INTERESTED IN MAINTAINING WORLD PEACE AND STRENGTHENING SOVIET-US RELATIONS." THE UNITED STATES WILL BE REPRESENTED AT BREZHNEV'S FUNERAL BY SECRETARY OF STATE HENRY KISSINGER AND VICE PRESIDENT ELLIOT RICHARDSON....

William Hyder, associate director of Santa Barbara's POLIS Laboratory, regards the vigorous obituary discussion as an important learning experience for the U.S. team. "The Soviets had something very definite to convey through that flattering message, but it took the U.S. team a while to see it. That's one thing we're trying to teach in the game—what do these actions really mean?"

POLIS Network diplomatic exercises are unique: Such large-scale simulation and gaming in international relations has not been attempted before for educational purposes. Over the past seven years, approximately 1,500 students from some 36 colleges and universities have participated, including, during spring 1974, students at Tokyo University, Université Catholique de Louvain (Belgium), and Southampton University (Great Britain).

The recent spring game (March 29-April 23) involved nation-teams from

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Loyola-Marymount University, Rutgers University, the University of Kentucky, California State Universities at Sonoma, Chico, and Stanislaus, and the University of California at Santa Barbara. It was the twelfth such interuniversity game to be conducted on the system. Students negotiated with each other via standard teletype terminals linked to a computer-based communications and information management system at UC Santa Barbara.

POLIS Network is the creation of Robert C. Noël, a professor of political science at UC Santa Barbara and director of the POLIS Laboratory (the acronym stands for Political Institutions Simulation). Noël's recently revised 22-page scenario, "International Relations in a Multi-Polar World," is a working script that encourages students to maneuver through a maze of plausible future foreign policy problems, including NATO/Warsaw Pact relations, strategic armament negotiations between the United States and the Soviet Union, the Arab-Israeli conflict, the balance of power in the Persian Gulf, Sino-Soviet relations, and the great power relations in the Far East.

"It's not that students learn anything new through the game, but they develop their knowledge on a different level," says Seth Thompson, a professor of political science at Loyola-Marymount and a four-year veteran of the POLIS Network system. "Students can take classes and learn about foreign policy decision making. But when they're in a POLIS game and a crisis happens, they know how it feels. They know it in their bones."

The consensus among instructors interviewed is that the game can serve as the core of an upper-division course in selected aspects of international relations. Its effectiveness as a teaching tool, however, inevitably depends on how seriously each nation-team approaches its task. "Occasionally there will be a team that doesn't take its part seriously," says Fred Pearson, a political science professor at the University of Missouri. "When that happens you get the frustrated feeling it's just a bunch of college kids fooling around."

Cast in the role of high-level foreign ministry advisors, the students must plan policy and implement it in written communication on a daily basis for a four-week period. Although encouraged to take on the perspective of their assigned nation, they are warned against mimicking such redoubtable role models as Henry Kissinger or Andrei Gromyko.

Noël meets with the control teams while students coordinate the U.S. team's plan.

The exercise is designed to produce good analysts of foreign policy—not good actors.

Technical requirements for participation at each campus location are minimal: a standard teletype terminal equipped with an acoustic coupler, and a telephone line to the minicomputer in the POLIS Laboratory. Students have little difficulty adapting to the equipment. As one UC Santa Barbara student put it, "The teletype terminal is just a typewriter that spits back."

Overall coordination of the game is more complex and occurs in the POLIS Laboratory where Noël and Hyder function as the umpires or political control team (POLCON for short). POLCON's role is essential: It makes final decisions as to plausibility, and therefore admissibility, of all actions; it provides information on the progress of the game and developments in the world through news releases and periodic updates of the scenario; and finally, it takes on all of the roles not already provided for in the exercise, including all nations and international organizations not represented by actual teams, all intranational elements, and all "acts of nature."

The computer functions as a super secretary, processing all messages and allowing POLCON to monitor communications between nation-teams. It maintains a complete data file of the game, and at the conclusion of the four weeks provides a printout of the entire exercise. Copies are then sent to all participating schools. Until this year, Noël experimented with student-run control teams using experienced seniors and first-year graduate students as resource persons. Reluctantly, however, he abandoned the idea. POLCON's role is simply too great a responsibility.

Noël, who has taught at UC Santa Barbara since 1963, has a long history with simulation and gaming. As a graduate student at Northwestern University, he assisted Harold Guetzkow, the founder of Inter-Nation Simulation (INS). His own POLIS Network exercises, however, owe more to the work of Herbert Goldhamer and Hans Speier at the Rand Corporation in 1954, and the work of Lincoln Bloomfield at MIT in the 1960s. Unlike Guetzkow's carefully controlled, man-machine simulations in which interaction among hypothetical nations was ultimately influenced by a formal model, Goldhamer, Speier, and Bloomfield worked on all-man exercises in which outcomes of diplomatic and military encounters were determined by

> "A well-constructed game does two things that few other teaching devices do as well: It brings the student as close to the experiences of decision makers as possible, and it encourages the student to seek out the broadest contextual understanding of the problem."
>
> *William C. Havard*
> *Dean, College of Arts and Sciences*
> *Virginia Polytechnic Institute and State University*

a set of umpires.

Noël's own experiments with political gaming via a telecommunications network originated out of the POLIS Laboratory, which in turn grew out of his long-held belief that simulation and gaming "add to a student's overall learning experience." Early in 1965, a routine, bureaucratic announcement crossed then assistant professor Noël's desk. The university was building a new facility to house the social sciences, and did the political science department want instructional laboratory space? "I really jumped when I saw that," Noël recalls with laughter.

After innumerable proposals and much negotiation, the laboratory was completed in 1968 and Noël went in active pursuit of funds: two competitive grants for innovative teaching projects ($50,000), a competitive grant from the National Science Foundation ($50,000), and special allocations from the chancellor's budgetary savings funds ($70,000).

Today the POLIS Laboratory houses its own computer (Digital Equipment Corporation's PDP 11/20); six low-speed, hard-copy terminals; one high-speed, hard-copy terminal; one high-speed, soft-copy terminal; a complete television system with six cameras, switchers, and two dozen video monitors; an interlab telephone system; and an audio-monitoring system. One large room has moveable walls that can be arranged to meet the needs of a variety of lab classes for the department as a whole.

Noël conceived of the laboratory as a center for wide-ranging, laboratory-oriented, social science instructional and research activities. Eight of the department's twenty-one faculty members regularly use the facility for lab sections. Others are occasional users, and some have rarely entered the facility. Noël's department chairman, Dean Mann, however, remains unconcerned: "Not everyone should use the lab. Simulation is only one approach to understanding and learning. Students would be heartily sick of simulation if every class had an exercise."

Spring quarter, 23 UC Santa Barbara students enrolled in Noël's Foreign Policy Lab/Seminar, a three-unit course built around participation in the POLIS Network game. All were upper-division students with considerable background in international relations and foreign policy courses. As Noël put it in his course announcement: "We, like the U.S. Marines, are looking for a 'few good persons' (about 20-25). These diplomatic exercises tend to be quite involved."

For this game (only one week under way when I visited in April), Noël was experimenting with a large, highly specialized team—the United States. In order to provide more adequate structure and supervision, he had divided the students into area specialties—U.S.-Russia, U.S.-Far East, U.S.-Indian Ocean, U.S.-Eastern Mediterranean—as well as three task forces of economic, military, and domestic advisors. The class convened two days per week in a quasi-National Security Council/State Department high-level staff meeting, with Noël, as "chairperson," hearing oral summations of what had occurred in the world and overseeing policy revision and strategy discussions.

One begins to see why Noël is candid about his search for "a few good persons." A student can spend up to 48 hours in interteam interaction, plus up to 90 hours in research, preparation of background papers, moves, and the final report. "There's no question but that Noël gets his students very much involved in the exercise," says Mann. "They dedicate an enormous amount of time—far more than they would in a regular class."

Noël's course demands that students prepare a position paper that analyzes the situation described in the scenario and the problems it poses for their nation (a requirement for all POLIS Network nation-teams); participate in policy-making sessions in class; maintain a journal and documentation file on their role in the exercise; receive and analyze moves sent by the other nation-teams; and prepare moves and send them out over the telecommunications system. Students are graded on their participation in the exercise and on a final examination or paper tailored to their area of specialization. Grades tend to be high because less enthusiastic students pull out after the first class meeting.

Grades, however, seem refreshingly insignificant as a motivating factor. Students refer to the course as "fun," "enjoyable," "a real chance to apply what we already know." They feel a sense of responsibility to teammates; the competitive drive is directed outward—over the POLIS Network. Seth Thompson at Loyola-Marymount has a convincing explanation: "The game builds an esprit de corps because it requires tremendous individual and collective responsibility. There's also a lot of country identification. When we first started talking about the game last month it was 'us' and 'this country we're playing.' Now there's no question. 'Us' is the Soviet Union, or—since we're playing two nation-teams—the 'Oil States.'" (As an interesting sidelight, it is noteworthy that in over 2,000 hours of gaming, war has been resorted to only once as a means of settling differences.)

Noël's Foreign Policy Lab/Seminar students are unanimously enthusiastic. Teri Weiner, a senior who has completed two political science internships in Washington, D.C., and Mexico City, expressed her initial misgivings: "At first I thought it might turn out to be just a game. But people are seriously working, and it's the most exciting class I've had in four years, other than my internships." Michael Fitzpatrick, a senior on the U.S.-Economic task force, talked about the game's value as a "rough approximation of how the world works." Gathering up his books, he was off to the library to research the productivity of the OPEC nations. "After studying economics for four years, I'm finding that what is good economically is not necessarily good politically," he said

Learning experience:
Laboratory/Seminar in Foreign Policy Problems. Prerequisites: International Relations and one other course in the foreign policy of the major powers. Enrollment: 25-30 upper-division students.

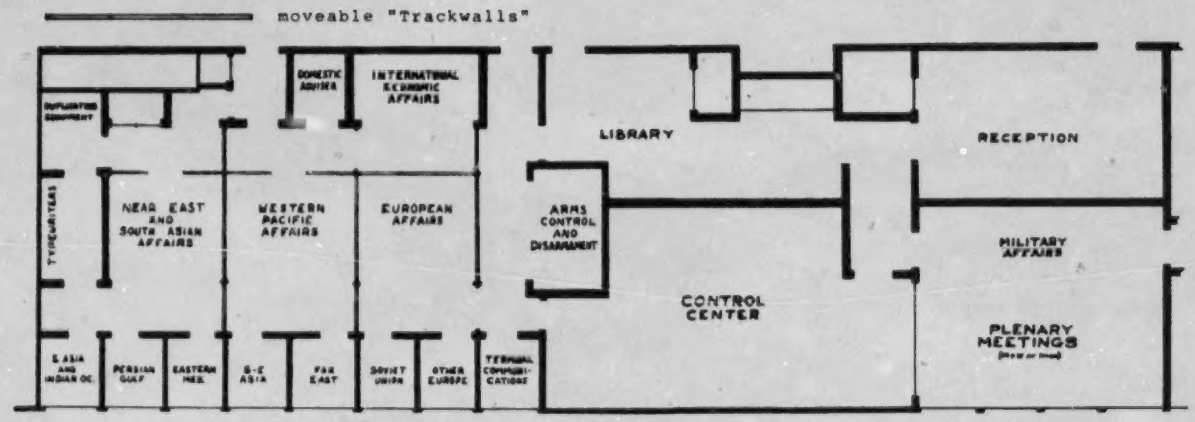
Other descriptions:
"The POLIS Laboratory," *American Behavioral Scientist*, Vol. 12, No. 6, 1969.
"A Laboratory for Theory Development Through Simulated Environments," in R. Smith (ed.), *Social Science Methods: A New Introduction*. New York: The Free Press, forthcoming.
Additional publications are available through the POLIS Laboratory.

Similar programs:
Over 35 institutions participate in the POLIS Network exercises, including Dartmouth College, the University of Kentucky, Douglass College at Rutgers University, Memphis State University, and the University of Missouri at St. Louis.

Contact:
Robert C. Noël or William D. Hyder, Department of Political Science, University of California, Santa Barbara, California 93106, (805) 961-3628

POLIS LABORATORY

(partial floorplan)



Facilities are available to students for terminal access, individual study and research, and ad hoc meetings.

ruefully. Guy Leo, a military advisor on the U.S.-Middle East task force, said he took the course because he was interested in power balances. "I'm learning that diplomacy is a cat-and-mouse game. Right now we're waiting for the Soviets to come to us with specific proposals on SALT. If they initiate first, then we'll have the upper hand."

For those who question the value of experiential dabbling in international diplomacy, Noël and his colleagues muster convincing arguments. "We try to create a realistic environment for students, but it is also very important for them to occasionally step outside that environment and look at the game as observers," says Associate Director Hyder. "Just as they would observe the real world as social scientists, it's important for them to ask critical questions about the simulated world: Where is the behavior in the simulated world actually modeling what goes on in the real world? How is it different? What can I learn from it? At the same time we're building something, we're trying to get the students to tear it down."

Jonathan Wilkenfeld at the University of Maryland insists that learning is further enhanced when students represent a country other than the United States. "There's great value in immersing oneself in the perspective of another country, particularly a Third or Fourth World nation. At its most basic level, the game teaches students to be better readers of the news paper."

Noël insists that his students become sophisticated analysts of the international scene—even if they never seek employment at the State Department. He does not, however, argue that simulation should replace the lecture method, case studies, or area studies. In response to the criticism that POLIS Network exercises are "fun and games" and an "easy out" for the advanced student, Noël's reply is simple: "What's wrong with having a course which allows students to apply ideas learned from background reading and other, more traditional classes?"

At present, no formal, systematic evaluation is under way for either the POLIS Network or Noël's own Foreign Policy Lab/Seminar. "Motivational effectiveness has been the principal finding in past evaluations of simulation and gaming," Noël says. "I don't need to do another systematic study to discover that games motivate students. I already know that happens."

He does, however, plan to modify his Foreign Policy Lab/Seminar to include a technique from international relations research methodology—events/interaction analysis. Students will be asked to relate every move to an explicit list of some 22 types of interaction: Is it a threat? A yield? Who are the intended direct objects? Who are the intended indirect objects? The technique is designed to sensitize students to more subtle gradations of actions in international diplomacy. It should also provide (through pretests and posttests) useful data to assess whether students do indeed learn intellectually, as well as emotionally, from the game experience.

As one of the by-products of his experimentation, Noël plans to write a manual that will guide instructors in running larger, more specialized teams. "I'm convinced now that students need more supervision," he says. "For one thing, it's very hard to get students to do the detective work of bibliographic searching. Few will really track down references, and there's no use blithely pretending they do." Noël dreams of someday providing POLIS Network participants with manuals, bibliographies, reprints, and perhaps even newsclippings. Having such a set of documents, he insists, will upgrade the quality of each team's performance.

Noël's biggest concern at the moment, however, is the communications cost for colleges and universities that participate outside of California. Although he charges only $100 per nation-team to play in a POLIS Network game, long-distance telephone rates for eastern schools can run $500 or more, a staggering financial burden for some departments. Noël is mulling over several possible solutions, for example, a regional satellite network that would make communication from the East Coast the equivalent of a local call.

Meanwhile, in spite of Ma Bell, there is enough enthusiasm from students and faculty alike to guarantee expansion of the POLIS Network system. "Right now we've got enough regular players to run either one big game or two medium-size games a year. With a solution to the long-distance telephone call, we could really open it up." ■

EQUALIZING THE OPPORTUNITY TO LEARN

by C. Eric Lincoln

San Marcos is the home of Southwest Texas State University, the institution from which Lyndon Baines Johnson received his baccalaureate degree in education. It has come a long way from a small teacher's college, and today with 13,000 students it is looking for distinctions besides the alumnus who first brought it to national attention. The recent work of two young political science professors may help things along. Indeed, the implications of the preliminary findings by professors Willard B. Stouffer and George M. Weinberger may reach far beyond anything the two professors had in mind when they issued their "Preliminary Report on the Impact of PSI on Spanish Surnamed Students."

PSI (Proctorial System of Instruction) was first used at Southwest Texas State in 1973 in an effort to find a practical means of dealing with a required course (Political Science 2310—Principles of American and Texas Government) that had too many students, too many sections, and not enough teachers—a rather common phenomenon in contemporary higher education. The hope—equally common—was to devise a means whereby fewer professors might teach more students with greater effectiveness without increasing the course load of full-time faculty and without hiring any more part-time teachers. To that end, it was finally decided to give the Keller Method a trial run. The Keller Method, of which PSI is a variant, had earned high marks in certain disciplines (particularly psychology) at some very respectable institutions. It was enthusiastically urged on the department by professors who had seen it at work. Named for its originator, Fred S. Keller, a Columbia University psychologist, it stresses interpersonal instruction and typically requires the student, proceeding at his own pace, to master a given number of units of carefully selected material. Attendance at lectures is optional and the student's responsibility is limited to passing short, objective unit tests based on what he has read rather than on what he has heard—or is presumed to have heard. It was thus assumed at Southwest Texas State that Posi 2310, a survey course, could be effectively taught via the Keller Method using graduate students as instructors with no sacrifice of quality. The graduate students would be under the supervision of a full-time faculty member.

During the spring of 1973, six sections of Political Science 2310 were taught by PSI, and seven were taught by the traditional lecture-discussion method. At the end of the course, it was noted that the PSI students scored higher than their traditionally taught counterparts; there was also a wholly unexpected result: Spanish-American students in the PSI sections scored 9 percent higher than their compadres in the traditionally taught courses, and managed to perform as well as the Anglo majority in the same sections.

Despite the fact that Spanish Americans constitute a slight majority of the population in San Marcos, they represent less than 6 percent of the college population at Southwest Texas State. By college standards, they are considered educationally disadvantaged, which is to say they lack certain fundamental experiences common to students who come from white, middle-class backgrounds. As a result, and to no one's surprise, they scored significantly lower than Anglo students at the beginning of the course. What did astonish everyone was that by the end of the semester, the Spanish-surnamed students enrolled in the PSI sections of Political Science 2310 had closed the performance gap between themselves and the Anglo majority.

The unusual success of this course, particularly for educationally disadvantaged students, suggests a closer look from the perspectives of both content and methodology. In the first place, it is important to emphasize that the Keller Method rests heavily on the assumption that immediate positive reinforcement—

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the reward a student gets from successfully negotiating a unit of instruction or passing an examination—is critical to continued motivation. Delayed reinforcement—informing the student of his success days or weeks after it has occurred—is considered of little or no value as an incentive. Hence, in the PSI courses, every effort is made to grade a student's unit test and return it to him within the hour that the test is administered.

Similarly, punishment is considered detrimental to effective learning. If a student fails a test, he is not chided and there is no penalty for failure or retesting. If the student wishes, the instructor will point out weaknesses and suggest ways of overcoming them. Students are urged to take full advantage of the instructor's availability for constructive help, but instructors are very careful not to impose counseling on their own initiative. One student admitted that only in the PSI class did he really feel like an adult. "If I do it OK," he said, "I have done it for myself. If I flunk it, nobody makes me feel foolish."

A second element of critical importance to the PSI approach is that learning is a matter of recall rather than of recognition. The cultivation of memory, even to the point of memorizing, is encouraged. To facilitate the development of recall techniques, the materials to be covered in the course are organized into 15 units of 4 parts each. These four parts include a philosophical objective, assigned reading, a list of behavioral objectives, and a sample test consisting of five or more objective questions. The behavioral objectives (for example, "list six characteristics that all political systems have in common") require in-depth reading that inevitably broadens the student's information base beyond what is needed to answer the specific questions he is researching. A kind of holistic perception is acquired that contributes to the student's overall academic readiness. Since mere recognition is uncertain and not contextual, it is unreliable for a long haul covering not 1 but 15 units, and a final comprehensive exam.

A student may take a written unit test as many times as necessary to earn a passing grade. While there is no penalty for failure, after five unsuccessful attempts on the same unit he is given an oral test known as a "deck option." A deck is a number of index cards, each of which has a question on one side, with the material from which the answer derives on the other. After studying the deck, the student takes it back to the instructor, who discusses it with the student to see if he understands the material covered. If so, the student may then be tested orally on any 10 cards selected by the instructor. If he passes at a 90 percent level, mastery is assumed and the student may move to the next unit. The deck option is designed to avoid repeated testing where there is little evidence that a written test would be successfully negotiated.

Principles of American and Texas Government is the first half of a two-course sequence required of all degree candidates at Southwest Texas State. It introduces the student to the nature of political science and the major political institutions in the nation and the state. As noted earlier, 6 of 13 sections of the course are taught by PSI while the remaining 7 are taught by conventional methods. All sections use the same required texts, although each professor may offer supplementary material.

When the PSI courses were first offered in the spring of 1973, the teaching faculty had already been prepared in a graduate seminar on the Keller Method. Literature on PSI was studied and discussed, and drafts of units for a Keller Method approach to Political Science 2310 were prepared and evaluated.

> "The effectiveness of the Keller Method as a means of teaching educationally deprived students provides a general lesson in how to cope with the catch-up problem without resorting to remedial education or frustrating the goal of universal higher education."
>
> *William C. Havard*
> *Dean, College of Arts and Sciences*
> *Virginia Polytechnic Institute and State University*

When classes began, students were given handouts carefully explaining the Keller Method, and the study guides were ready for distribution. Of the six PSI sections, four were taught by two graduate students, and two were taught by a full-time member of the faculty. Similarly, two graduate students taught four of the sections using the conventional lecture method, while the other three sections were taught by a full-time member of the faculty.

It soon became apparent that the students' choice of sections was made primarily on the basis of convenience, but since both the PSI and the conventional sections were offered at both convenient and less convenient times, there appeared to be no qualitative difference between the students registered in the respective sections. Nor is it clear yet that one section or another stimulated more interest in the subject matter of the course because of the method of instruction. The attitudes of students in both sections (other than those planning to major in political science) seemed to be that the course was a requirement that had to be dealt with rather than a unique opportunity to learn about the systems of federal and state government. This appeared to be no more or less true of the Spanish-surnamed students than of the others. It would seem a reasonable expectation that since more Spanish students do well under the Keller Method at the introductory level of political science, there might be increased interest and achievement in that discipline at more advanced levels. A more refined evaluation of the data now being accumulated will undoubtedly shed light on that possibility. For now, the burden of the findings at Southwest Texas State is that the Proctorial System of Instruction may well be a solution to the re-

Learning experience:
Principles of American and Texas Government. No prerequisites. Enrollment: 1500.

Other descriptions:
"PSI at Southwest Texas State University," *Division of Educational Affairs Newsletter*, American Political Science Association, Summer 1975.
"The Impact of PSI on Spanish Surnamed Students: A Preliminary Analysis," paper presented at the annual meeting of the Southwestern Political Science Association, 1975.

Similar courses:
Oakland Community College, Bloomfield, Michigan; University of Texas at Permian Basin; University of Utah; and State University of New York College at Brockport.

Contact:
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quired course problem.

PSI avoids large lecture sections, provides for more students, and gives graduate students some teaching experience. The cost of teaching Political Science 2310 via the Keller Method is only $11.66 per student per semester hour as compared with $17.88 for traditional instruction, a savings of $6.22 with no sacrifice of learning on the part of the student. All of this is supported by statistical measurements offered by the teachers involved in the experiment. However, it is the incidental and unexpected findings concerning the performance of underprepared students that may in the long run outweigh the value of PSI as merely a way of dealing with excessive required course loads.

Despite the fact that their initial research was directed toward handling a nuts-and-bolts course in political science, professors Stouffer and Weinberger were sufficiently sensitive to the learning problems of minority students to recognize immediately any shift in their traditional patterns of performance. This kind of alertness is not to be taken for granted. A more common response in the teaching profession is to accept in the beginning the stereotype of underperformance by educationally deprived students, and to be from that point on forever oblivious to any reason for reassessment or change of opinion. However, when it seemed clear that the performance of the Spanish-American students in Posi 2310 was definitely atypical, Stouffer and Weinberger widened their research interests to provide statistical documentation of what was in fact taking place.

Their operating hypothesis correctly recognized that most American institutions assume as a matter of course that their significant clientele will be white, middle-class Americans; that students who are not from this group will be at a disadvantage because of the prior assumptions of the educational system; that the impact of underprepared students on the educational system is significant but not yet fully determined; and that the successful integration of the underprepared into the larger society is related to educational performance. It seemed reasonable, therefore, to regard any deviation in academic performance as important and worth investigating.

When Stouffer and Weinberger found that Spanish Americans enrolled in the PSI sections performed better than Spanish Americans taught by traditional methods; that they performed as well as Anglos in the same sections; and that Anglo students in PSI sections scored higher than Anglos in the conventional sections, the implication was that PSI had apparently enabled the minority students to catch up without penalizing or slowing down the majority students performing at normative levels. If true, this could signal one of the more significant educational advances in many decades.

The critical question of course is Why?, and that is the question the San Marcos report does not answer. Unfortunately, the preliminary nature of the research cannot provide the data needed for reconstructing some of our educational concepts, but Stouffer and Weinberger have offered some tentative suggestions as to why certain normative expectations about the educationally disadvantaged may have been upset. First, any lecture course would be especially taxing for Spanish Americans because it would be offered in English, a second language for many of them. This would pose problems of attention span and vocabulary. By extension, this may apply to other minority groups. PSI, however, focused on private reading rather than on trying to catch and interpret an oral lecture.

The lecture-discussion method may also be intimidating to minority students in a majority group. They tend not to ask questions needed for clarification, and are often self-conscious and overanxious when asked to participate in discussions. PSI eliminates the traditional physical setting and does away with classroom discussion. A student with problems consults the professor on a

Developing Research Skills

In 1965, the University of Michigan's Center for Political Studies conducted lengthy interviews with graduating high school seniors and their parents drawn from all social and geographical areas of the United States. The purpose of the study, directed by M. Kent Jennings, was to obtain the opinions of the two generations on a wide variety of political and nonpolitical subjects. Eight years later, in 1973, the Michigan researchers interviewed some of these same individuals again (in all 1,062 pairs of parents and children), making it possible to see how opinions of this large sampling of Americans changed over one of the most turbulent time spans in the nation's history.

The overall results of the survey were widely publicized at the time, but the enormous amount of data generated was so unwieldy as to make it difficult for teachers and even researchers to make wider use of the statistics. But through a program called SETUPS, Jennings's fascinating data are currently being analyzed by undergraduate students on many college and university campuses.

SETUPS, which stands for Supplementary Empirical Teaching Units in Political Science, is a program developed by the American Political Science Association (APSA) in collaboration with the Inter-University Consortium for Political and Social Research in Ann Arbor. Aimed at stimulating undergraduate students to independent and critical thinking, the program has produced a series of modules that give students access to timely data otherwise not available for classroom use, allowing them to learn quantitative skills often developed only in the hard sciences.

The modules were prepared by a group of political scientists, all of whom had experience teaching American government, during a summer workshop in 1974 funded by the National Science Foundation. After a year of extensive field study and evaluation had shown them to be effective teaching tools, the seven modules on American politics were released for distribution.

Each module contains an essay, a series of integrated exercises, a discussion of the methodological tools needed to complete the exercises, and a data set with notebook to guide access to the data. Now being used at 145 colleges and universities, the SETUPS monographs on American politics cover a wide variety of subjects: political participation, voting behavior in the 1972 Presidential election, a comparison of political parties, representation in the U.S. Congress in 1973, analysis of the Supreme Court, energy and environmental problems, and the budgetary process. Over 11,000 copies of the

personal basis to clear up whatever is bothering him. Each student is also given a study guide at the beginning of the course. The guide is very clear about what is expected, as lecturers often aren't. Reading can, therefore, be more precisely and more profitably focused. The student no longer needs to listen to an entire lecture while trying to memorize it in prayerful hope that the part remembered will turn up on the examination. Finally, because reading is stressed in PSI, the educationally deprived student is continually forced to use the most basic academic tool. This is self-rewarding. And again, when he turns in a unit examination, it is immediately scored and returned. This instant feedback is another incentive for pushing ahead. The student proceeds at a comfortable pace, avoiding the lock-step of traditional instruction.

That said, the picture is clouded by certain disadvantages that seem to accompany the Keller Method. First, there are problems of time management. Since students may take (and fail) the unit tests an unlimited number of times without penalty, the tendency to procrastinate is strong. The question of time management reminds one, too, that not enough is known about possible variations in time perception and application within various American subcultures. There seems to be good evidence, for example, that African-, Indian-, and Spanish-derived cultures are not initially geared to the concept of time inherited from the protestant ethic. Stouffer and Weinberger also found that students accustomed to being spoon-fed were soon disenchanted with PSI. One prominent feature of the Keller Method is that the locus of responsibility is clear at all times. This in itself is frustrating to students frightened by the realization that they are essentially on their own. And finally, there is an unusually high drop-out rate; the rate of failure for both Spanish-American and Anglo students in the PSI sections is much higher than for those taught by traditional methods.

Stouffer and Weinberger are understandably cautious when interpreting the results of their preliminary research. "Our findings," they concede, "do not prove anything; they simply suggest possibilities for further research.... [But] if our preliminary findings are substantiated by further research, then PSI offers a real opportunity for Spanish-surnamed students to close the performance gap between themselves and the majority of the student population."

That is as far as they are willing to go. And that is far enough on the basis of the data on hand. But hope is never bound by what we know; indeed, hope is the willingness to risk a stake in what we don't know. The stake in the San Marcos experiment is not just for Spanish Americans, but for the millions of others outside the normative experience of white, middle-class America whose academic and cultural readiness is nonetheless measured by such normative standards. Some nine million American school-age children are outside the Anglo tradition, and so by normative standards must be considered culturally deprived. English must be considered a second language for at least half of these, and a large majority of the remainder probably have no functional command of English at the Anglo level of communication. Disillusionment sets in early, the drop-out rate is high, and the "superior virtues" of the Anglo spectrum of values become unchallenged, self-fulfilling prophecies.

Such a situation cannot be healthy for a large nation of diverse population. Perhaps for that reason it is our educational system itself that has the greatest potential stake in what seems to be happening at San Marcos. In the world we face tomorrow, so arbitrary a provincialism in the education of the American people may be an anachronism we can ill afford to maintain. Nor should the interest in the experiment be limited to political science. PSI has been tried extensively in classes in psychology. Now that it shows promise in at least one other discipline, other experiments in other fields would seem to be in order, perhaps at all levels of the educational enterprise. ■

American politics modules have been ordered from APSA, which serves as the distributor. A new series of modules covering cross-national and world politics is presently undergoing field study and is expected to be available in January 1977.

One enthusiastic SETUPS user is Paul Allen Beck, 32, associate professor of political science at the University of Pittsburgh and coauthor—with Jere Bruner and L. Douglas Dobson—of the monograph based on the Michigan generational research. A highly important objective of the SETUPS program, Beck believes, is to "involve students in the process of empirical research." His students reach their own conclusions based on their own computerized examination of the data, all the while learning about Americans and about themselves. In the case of the generational research, students move from relatively raw data—what percentage of children and parents changed party affiliation from 1965 to 1973—to more sophisticated analysis.

Ideally, the SETUPS materials provide students with a fund of empirical data and teach them how to analyze the information. Students thus get both the medium and the message. In the process they are given the opportunity to do definitive investigations of real-world phenomena—hands-on experience with data from large statistical bases otherwise unavailable.

Beck, for one, believes the SETUPS modules represent a significant breakthrough in higher education by getting students directly involved in research. "The conventional procedure in political science courses is for students to read textbooks and believe what they read," he says. "In a sense, they become captives of those who write the books. With SETUPS, they don't just accept things on faith. They really learn by doing."

Helping to develop and use the SETUPS materials has been, for Beck, "the most gratifying and exciting experience of my six years in undergraduate teaching." He reports that students not only enjoy working with SETUPS materials but also acquire "considerable insight into this type of political research." And, he adds, many are so strongly motivated that they do much more data analysis than is required. As with many of the professors using SETUPS modules, Beck has noted that his own ratings as a teacher have risen dramatically. He feels assured that his effectiveness has been "influenced substantially by the SETUPS modules."

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APPLYING POLITICAL THEORY

by William R. Grant

Elinor Ostrom, an Indiana University professor of political science, has focused much of her research on the implications of various policy choices, especially those proposed as a means of reforming the delivery of urban services. She arrived at the use of field work as a teaching tool for undergraduates almost by accident. In the fall semester of 1969, Ostrom taught a graduate seminar in which students surveyed the literature on different methods for measuring the output of public agencies as preparation for field work the following spring. During the spring semester she was also assigned to teach a sophomore honors seminar. Those students wanted to get into field work and it was decided, after long discussion, to combine the work of the graduate and undergraduate classes.

Indiana University, located in Bloomington, is a large and complex institution, and its political science department, with 35 faculty members and 120 graduate students in residence, is one of the nation's largest. Some 110 undergraduates and 30 graduate students have taken four courses directed by Ostrom that involve field study and are designed to relate political theory to a real-life setting. In 1970, the first group elected to measure the performance of the nearby Indianapolis police department against that of several smaller, neighborhood-based departments. The local government had been discussing the possibility of combining all of the departments into a single metropolitan police agency, and Ostrom's students decided to try to determine which system delivers better service. The primary method they used was survey research to measure the perceptions of citizens about their experiences with police and police services.

The theoretical underpinnings of the Indianapolis study are typical of Ostrom's approach. In all of the courses, Ostrom explains, "there is an attempt to look at some major political, institutional variable that is being considered for the reform of the delivery of urban services."

In the early stages of each of Ostrom's field study courses, students first focus on the broad social theories that influence policy making. In the case of police reform, this might include readings that describe police activities in diverse settings, literature that presents opposing views of the role of police, and studies that have attempted to quantify services. Students go on to examine the limitations of previous research and the difficulties of measuring public goods in general. Then the students and instructor design their own instruments for measuring—which may include interview schedules, observation forms, record or accounting sheets, and the like. In refining their work, they make decisions about what kinds of activities can be measured, what makes a good question, what are the most useful observations and records to keep, and what effect their data can be expected to have on policy recommendations.

Research is studied not for its own sake but as a prelude to the field work, as one method of putting political theory to the test. The field work is critical, Ostrom believes, since "it is possible to reform and make things worse." As the field work gets under way, students are constantly encouraged to keep clear the connection between what they are doing and the theory behind it. Ultimately in the 1970 Indianapolis study, the students questioned the wisdom of creating a single countywide agency, concluding that small communities were served best by their independent police departments.

A second study, undertaken at the suggestion of black students, involved a similar look at police service in largely black communities in and around Chicago. That study found that, although 14 times more money was spent in the Chicago neighborhoods, citizens in suburban neighborhoods felt they received similar levels of service. These two small-scale studies spawned a much larger effort in the spring term of 1972 when about 55 graduate and undergraduate students spent 10 days doing simi-

WILLIAM R. GRANT is the education writer for the Detroit Free Press.

lar field work in the St. Louis area.

In the spring of 1974, Ostrom's students went back to Indianapolis to measure two other urban services, street lighting and road conditions. Many preparation sessions were spent in the middle of a Bloomington street arguing about just how big a hole in the pavement had to be in order to be considered a "pothole." Among the results of the project was a published packet of materials that describe the various devices students developed to measure streetlight output and road conditions.

The fifth field study, which will take place during the 1976-77 academic year in three as yet unchosen metropolitan areas, will again focus on police service. The earlier courses involved survey research, for which students were extensively trained in interviewing techniques. This time the field work will involve observation. Students will ride in police cars and observe at the dispatch desks in police stations, and training will focus on observation techniques. The experience of earlier courses has taught Ostrom that theory and practice do not fit comfortably into a single semester. From now on, whenever possible, courses will extend over a full year.

The field work has brought theory to life. "So much of undergraduate education is passive," Ostrom says. "You read a book or see a film." It is possible, she wrote in one review of her courses, "for preparations in regular courses to deal with a formal body of knowledge without encouraging students to become independent thinkers and pursue work as productive scholars."

For the first three years these courses were an idea in search of a home. The first Indianapolis study was developed quickly, in response to the students' desire to get into the field, and it represented a last-minute reshaping of a political science class that had been intended largely as a reading course. Time was not available to search for funds, and the whole project was carried out for less than $500. Other courses were offered through whatever department had funds to support them. The Chicago study was aided with a grant from the IU Afro-American Studies Program; the university's urban affairs program has contributed some aid; and the St. Louis project was supported by a grant from the National Institutes of Mental Health.

Finally in 1973 Ostrom's courses found an administrative home with the creation within the political science department of the Workshop in Political Theory and Policy Analysis. She and her husband, also an IU professor of political science, were the moving forces. The workshop provides a headquarters for the field study courses, as well as a regular secretarial staff and other amenities that were lacking in the early years. It is a loose confederation of students and faculty whose basic common denominator is their interest in the political theories that have characterized the Ostroms's work. The workshop's name was chosen carefully to reflect the concern for linking theory and policy.

In a little over two years the workshop has generated $951,890 in grants and $236,426 in overhead funds to the university, including a grant from the National Science Foundation that supported the 1974 Indianapolis field work on street lights and roads. The outside funding is important, Ostrom says, not only because it allows the projects to be undertaken but because it underscores in the students' minds that the research is genuine and that the methods used "must be professional from ground zero. This is a real study with results that will be published," Ostrom tells her students, and the work is expected to measure up. The fact that grants continue to come in is an indication that funding agencies, including some that normally do not underwrite student-conducted research, are satisfied with the caliber of the work.

This is all the more notable since undergraduates who take one of Ostrom's courses are not required to have completed any prerequisites. The courses are electives, and Ostrom or one of her associates interviews all students before they are permitted to enroll, to determine that the student has "a little maturity" and that he or she recognizes the amount and kind of work that will be done.

The course is a difficult one to teach, since students are involved from the initial research design to analyzing the data, and Ostrom walks a narrow line between running the course herself and letting the students run it collectively. Students are lost if the instructor does not provide structure, she says. She keeps the work well grounded in political theory and is responsible for seeing that the research design of any field work is of a quality that will yield data worthy of publication.

Students have considerable latitude within those bounds, however, and Ostrom cautions instructors who would try to use such a class simply as a means of carrying out a faculty designed research package. "Don't think of undertaking research with students as a cheap way of getting your research done," she says. Students will be "doing your busy work and they'll know it."

An instructor also should not undertake such a project unless prepared for the conflict that comes from what Ostrom calls "intellectual ferment." There was plenty of argument among students in each of the courses over which specific questions would be asked in the surveys. One student remembers holding out at length for one series of questions until finally his views were accepted by the others. The student found, however, that the data collected were not very useful because the questions had not been specific enough. Ostrom is the referee in these sessions, which sometimes have gone on late into the night, and she tries to intrude only when she thinks it necessary to protect the quality of the research.

> **"Starting from an established base of theory, students are able to examine its application to concrete problems, and in the process arrive at conclusions that confirm, chailenge, or modify their theoretical preconceptions."**
>
> *William C. Havard*
> *Dean, College of Arts and Sciences*
> *Virginia Polytechnic Institute and State University*

Learning experience:
Workshop in Political Theory and Policy Analysis. Three courses offered: Public Policy Analysis: Police, enrollment: 25; Service Delivery in U.S. Cities, enrollment: 15; and Political Theory and Policy Analysis, enrollment: 50.

Other descriptions:
"Ventures in Teaching and Research," *The Review* (Indiana University Alumni Association), Vol. 16, Winter 1975.
Urban Policy Analysis: An Institutional Approach. Washington, D.C.: American Association for the Advancement of Science, forthcoming.

Contact:
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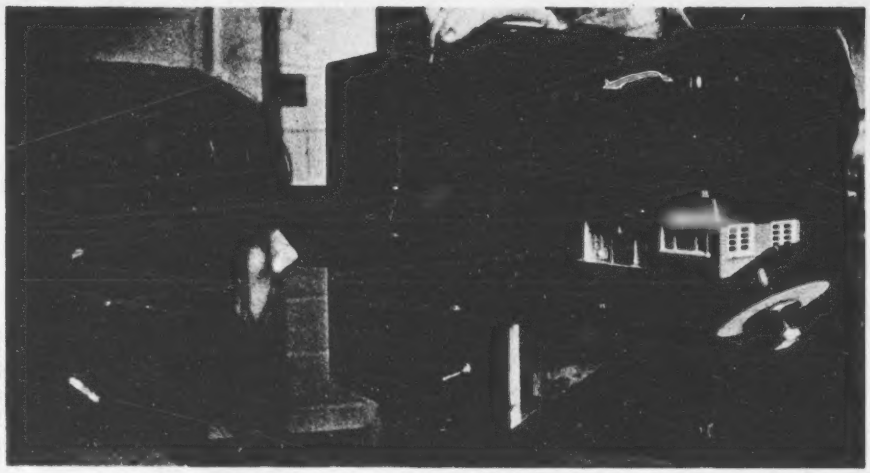

I.U. News Bureau

The street-lighting simulator is used to determine perceptions of lighting conditions.

A commitment to this approach is a commitment to many frustrations and long hours, but Ostrom believes it pays off in genuine student learning. Students, she says, "are participating in something they helped to plan and they are interested in doing a good job. All of us were in the field together. The students saw me put in as long a day as they—doing the same work they were."

In all the courses, graduate and undergraduate students have explored political theory in separate classes on different levels. But when it came to the field work, starting with the design itself, they worked together, and the undergraduates believed that their opinions carried as much weight as those of the graduate students. This has helped keep morale high, and it has demonstrated, says James B. Christoph, acting chairman of the political science department, that properly trained undergraduates "can operate at the same level as the average graduate student."

If these have been difficult courses to teach, they have also been difficult to grade. Grades, Ostrom says, have been based on exams assessing students' understanding of theory, participation in class discussion, and a final paper that each student writes analyzing some aspect of the data. Ostrom is careful to make clear to students that the field work itself does not count toward the grade. Students are told at the outset that they can choose not to go into the field or can return home if they find door-to-door interviewing not to their liking. That option has been exercised rarely, although some students have found themselves better suited to telephone follow-up than face-to-face interviews, and some have asked to be shifted from one kind of neighborhood to another.

Students attest to the workshop's success. David Allen, who went to St. Louis as an undergraduate, says Ostrom "was always willing to talk and listen and to take time for students. As a result you were willing to work yourself to death for her." Virginia Dodge Fielder, now an IU graduate student, says simply that Ostrom has "developed a great way of mixing teaching and pleasure. Learning from her becomes a pleasure." The group, says Christoph, has in effect "become a community which exists beyond a single semester."

In an effort to give students individual attention, the department now requires undergraduate majors to take a seminar, which is limited to an enrollment of about 16, in some aspect of po-

Conversations in American Government

President Ford teaches at the University of South Carolina. So do Hubert Humphrey, Ronald Reagan, George McGovern, Edmund Muskie, and Barry Goldwater. They are all instructors in a political science course called "Conversations in American Government," an introduction to American politics put together by James T. Myers at the university's Columbia campus and first offered in the spring of 1974.

In creating the course, Myers first outlined three major topics (fundamentals, machinery, and agenda), which he then divided into a total of 60 subtopics. Next he proposed an ideal governmental spokesman for each subtopic, and, backed by an unrestricted grant from the university, proceeded to contact each spokesman. While a few proved elusive, Myers discovered to his astonishment that, in general, the more important the individual, the more easily he was reached and the more willing to participate. (President Ford was contacted while he was a Representative, and finally met with Myers as Vice President.)

At each expert's convenience, Myers arranged a meeting either at a television studio or elsewhere with a film crew, and together Myers and the guest discussed a preselected subtopic in front of the cameras for half an hour. No payment was ever offered or demanded, although a number of experts requested an advance agenda of subjects to be covered. This resulted in a collection of television tapes that includes, among others, Carl Albert on "Congress and the Congressman," Melvin Laird on "Presidential Power," Earl Butz on "Government and the Farmer," and Justice Thomas C. Clark on "The Structure and Operation of the Federal Judiciary." Important governmental opponents are represented as well. George Meany discusses "Government and Labor," John Gardner talks about "Citizen Action," and Hugh Sidey (of *Time*), Sander Vanocur (formerly of NBC and NET), and Peter Lisagor (of the *Chicago News*) discuss different aspects of government and the media. The collection now numbers 70 tapes.

Each conversation was recorded in color, in a style deliberately derivative of commercial television talk shows. Myers, together with South Carolina's ETV network, also developed opening credits for each tape and commissioned fife-and-drum signature music from Don Gillis, USC's composer-in-residence and head of its Center for Media Arts Studies. Each week students are required to view four half-hour tapes and to attend one 50-minute discussion session in groups of about 15 each, supervised by graduate assistants. The first two tapes are shown continuously all day Monday and Tuesday; the second two are shown all day Wednesday and Thursday. Students

litical science during the junior or senior year. Some of the seminars involve field work. Some are readings courses. However, all are aimed at bringing students into close touch with at least one faculty member during their undergraduate years. But this effort, as with most educational opportunities, is of greatest value to those students who are motivated to take advantage of it. This is especially true of electives like the field study courses which require a far greater commitment of time by students than most other classes. Much of the field work has been done during vacation periods, and the long planning sessions add to the time and energy required of students.

Students who have become involved in Ostrom's field courses say that they have found it a complete learning experience that made even the most exciting reading and lecture course dry by comparison. Students who have done this kind of work, says Roger Parks, Ostrom's principal associate in the field studies, will never again look at a data table in a journal article or report and believe that it is chiseled in stone. "The best way to learn data analysis," Parks says, "is to have collected the data yourself. You begin to learn the limitations of the figures."

Precisely that kind of learning experience came for Mark Giaquinta in 1974, the afternoon he talked with an old woman in Indianapolis. All of the Ostrom studies have involved an attempt to determine the socioeconomic level (SES) of those interviewed. The woman Giaquinta interviewed was "very, very poorly dressed," lived in a ramshackle house, and had little formal education. She would not have rated high on any SES scale, but Giaquinta talked with her at length after their formal interview was completed. "She talked about Indianapolis and her perceptions of it, and what she was getting for her tax money. She appeared to be one of the brightest individuals I have ever interviewed. I still have some confidence in SES scales," says Giaquinta. "But now every time I see an SES level I think of that old woman, and I remember that contained within each figure are many individuals, and some contradictions." Understandably, Giaquinta's paper at the end of the course was on SES.

For undergraduates, the course ends with the paper. But the graduate students along with Ostrom and her associates have produced a variety of professional papers and journal articles using the data to argue points on a public policy issue. In addition, the data collected have been studied by students taking more traditional courses in data analysis where no field work has been offered. A workshop newsletter that reports on findings also goes out to local urban affairs offices.

There have been two specific spin-offs of the IU project. A former student now on the faculty at Grand Valley State College in Michigan made a study similar to Ostrom's of delivery of police services in the Grand Rapids, Michigan, area. Two faculty members at the University of Tennessee's Nashville branch made a similar study of police service in Nashville-Davison County. Those studies involved students, but they were replications of the work done at IU rather than new student projects.

Even though Ostrom believes her approach to field work can be used by other social science departments, and extended to areas outside political science, so far there has not been much attempt to try, even at IU. "The diffusion of innovation here has not been very fast," Christoph says. And certainly the approach is not for every instructor. The method takes someone, Ostrom says, who has "energy and patience and who is not upset by conflict. If students are going to have ideas," she says, "they are not all going to agree." ■

are free to drop in whenever they please. Also, each evening from 7 to 9, all day Friday, and for several hours on Sunday afternoon all four tapes are shown consecutively.

"We found very quickly," Myers has written, "that the [interviewed] practitioners are, by and large, excellent and effective teachers. It is not uncommon for a single 28-minute interview to contain 100 or more teaching points." To help students absorb such concentrated material, Myers and two colleagues wrote a study guide that, for each taped interview, includes a biographical sketch of the expert, an outline of the conversation, questions about each important point in the interview (with space to write down the answers), and a list of new and unfamiliar terms (defined in an appendix) that arise during the conversation.

Exams are multiple choice, standardized, and computer-graded, which has permitted use of the course throughout the university's regional campus system and over the state's ETV network. The university has also made the tapes available to outsiders, though so far the only institutions to have purchased any copies have been The Brookings Institution and the Container Corporation of America. USC offers the interviews on cassettes at a cost of $200 each (they cannot be rented) and also sells Myers's study guide for $4.95. Because of the high cost—and probably because few professors are eager to teach from someone else's lectures—to date no college or university has purchased them.

The tapes have cost the university in the neighborhood of $1,500 each, which is a bargain. South Carolina's ETV network donated time, tape, personnel, and equipment, and start-up costs were defrayed by a $4,000 grant from the Ford Foundation's Venture Fund. South Carolina's ETV network has aired all the tapes two years in a row, and Myers continues to update the material with new interviews whenever an old one becomes out of date.

Myers admits that he has not adequately assessed whether students learn or retain more in this introductory course than in others. But opinion surveys suggest that students generally like the course. And last fall, when Myers's two television sections had a combined enrollment of 340, the other three political science introductory sections, using traditional lecture formats, drew a total of 150. Still, television has in no way eliminated the need for student-teacher contact. "There is a strong correlation," observes Myers, "between attendance at class discussion and success on examinations."

For more information: James T. Myers, Department of Government and International Studies, University of South Carolina, Columbia, SC 29208, (803) 777-2675.

Teaching the Facts

The Ivy League schools are considered some of America's most selective colleges. Yet one of their students thought that John Locke, the English political theorist, was in fact a Frenchman. Another suggested that St. Augustine was a "major intellectual influence" on Cicero, who predeceased him by about 475 years.

Such egregious errors of fact in the study of famous political theorists convinced Roger D. Masters, a professor of government at Dartmouth College, that even the best students need basic drill. They need to get their facts straight before they can grapple with concepts. They need to remember what they've read. They must gain an exact knowledge of the subject to make informed judgments.

To help them with cognitive learning, Masters, since 1973, has called on the computer to assist in teaching courses on political theorists. Each of his students gets a special computer account number on the Dartmouth time-sharing system and instructions on how to run the machine. Once or twice a week, true/false or multiple-choice worksheets are distributed that focus on assigned readings. Before class, students go to a terminal and run the appropriate program. They are told immediately not only whether their answers are right or wrong, but also why the question is important. Computerized record keeping gives Masters a list of the students who have completed the worksheets, together with their scores and the time required to run the program—five or six minutes is average. The exercises are not graded, but a failing score is given to those (few) students who refuse to do them at all.

Masters himself had never touched a computer terminal before preparing his first computer-assisted course in 1973 with Joseph Harris of Dartmouth's physics department. Since then the computer has helped Dartmouth students understand basic propositions in the thinking of Hobbs, Rousseau, Plato, Marx, Machiavelli, and St. Paul, among others.

The notion that computers can help strengthen instruction in the so-called "soft" social sciences is relatively new. And using a computer to examine the basic propositions of Jean Jacques Rousseau is rather droll since Rousseau distrusted machines. (On the other hand, Rousseau believed that purely passive reading was generally unreliable as a method of learning, and computer-assisted instruction discourages passive read-

The Power of a Good Lecture

Color the room gray. Bare walls, a blackboard, hard wooden chairs. Nothing more. No electronic gadgetry, no audio-visual material, no computer-assisted instruction. Just a 24-by-24-foot room with 17 students and a professor up front.

The scene is a classroom at Livingston College, Rutgers University in New Brunswick, New Jersey. The course is Political Leadership. The lecturer is Wilson Carey McWilliams, 42, professor of political science and chairman of the department. McWilliams lights a cigarette and starts talking about two men who "helped shape the character of American politics in the modern era." One is Franklin D. Roosevelt, thirty-second President of the United States. The other is John L. Lewis, longtime head of the United Mine Workers Union.

For the students the two men are merely names in history books. McWilliams quickly brings them to life. He notes the similarities: both Protestants, both "terribly ambitious," both superb phrase makers. Roosevelt a true aristocrat, a "rentier." There was a dissonance between Roosevelt's class and his religion. After his father died he had engaged in a "reflective inner search for the deity." Lewis, an Iowan who worked in the mines from the age of 12, came from a "militant low-church background." He was loyal to his social class; Roosevelt was a "traitor" to his.

McWilliams, lighting a second cigarette, notes that both FDR and John L. Lewis were "classical rhetoricians." Talking in public was almost second nature to them. "The very idea [of either man] hiring a speech coach would have been unthinkable." The teacher digresses to explain the difference between Hebraic and Hellenic rhetoric. Adlai Stevenson, he says, used Hellenic or Greek rhetoric. It is marked by "the bon mot, the quick phrase, not an excess word." Hebraic rhetoric is democratic; it is pitched for the ear of the peasant as well as the king. It is poetic and repetitive and filled with biblical allusions; it instructs the least informed.

To illustrate his point, Carey McWilliams the professor becomes Carey McWilliams the actor. He mimics Roosevelt taunting his political foes, and he imitates the rolling rhetoric of John L. Lewis. He notes the skillful repeating of FDR's jibes at three Republican isolationists, Martin, Barden, and Fish. For more on repetition, McWilliams refers his class to the third chapter of Ecclesiastes: "To every thing there is a season, and a time to every purpose under the heaven. A time to be born, and a time to die."

Now McWilliams lowers his voice several octaves and pretends he is John L. Lewis cautioning the U.S. labor movement against a Communist witch hunt in its own ranks: "Thou shalt not muzzle the ox that treadeth out the corn." He quotes Lewis's inspired attack on his fellow union leaders: "This movement does not have a head—it has a neck that has growed up and furred over!"

McWilliams has been lecturing for 50 minutes. He has used no flamboyant gestures, no taped speeches or film strips. Just straight talk plus some marvelous impersonations and learned allusions to Plato, Socrates, de Tocqueville, and others.

Now he's winding up. He notes that tactical skills of statecraft can be learned. Richard M. Nixon, he says, learned them. But a broad moral foundation, a basis for decent living and behaving, can't be acquired. It's either there in the man as a result of "early socialization," or it isn't. Both FDR and John L. Lewis, he thinks,

ing.) This use of the computer has helped demystify it for many students, Masters believes. And he's convinced that its help in teaching basics is badly needed. "We made a terrible mistake in abandoning rote learning. Even memorization of apparently useless material can be good mental training," Masters said. "If the elite can't even get its facts straight, we're really in trouble."

The Dartmouth professor makes no bold claims for his methods. Research is limited, he says, although his own results indicate that students retain more of what they've read when exposed to computer instruction: "Whereas students generally answer about 40 to 50 percent of the true/false questions correctly, items reinforced on the computer are answered correctly 80 percent of the time." Though these results are tentative, there are other advantages. By requiring students to go to the computer every week or so with their worksheets, Masters thinks he has helped them pace themselves better. With computer-assisted instruction it's not as easy to loaf all term and cram for finals. And by linking the computer terminal with TV monitors, he has been able to provide visual illustrations for his lectures.

Instead of blocking communication between instructor and students, the computer can actually improve give-and-take. Students can use the computer to write memos, queries, or complaints. Masters then answers them by computer, usually within 24 hours. The two-way computer talk has led to more extended face-to-face exchanges and lengthier discussions of subjects raised by students in their memos.

Some students question whether a college-level course should focus on rote recall of reading material. And some rebel against the computer. But most seem to like it. Certainly, Masters does. He emphasizes, though, that the computer is not a substitute for any major element in the teaching process. Reading, lectures, discussions, papers, and exams continue to be the core. However, he believes that the computer, which has a flawless memory, can help students improve theirs. And Masters likes to recall that Plato, in setting criteria for selection of the philosopher king, said that "the man who has a memory and is hard to deceive must be chosen."

For more information: Roger D. Masters, Department of Government, Dartmouth College, Hanover, NH 03755, (603) 646-2153.

had this moral foundation. "The political art," he concludes, "depends on courage. It requires courage to admit you're wrong, to abandon a position. Courage is something we can't teach." Roosevelt and Lewis had courage, McWilliams concludes. And he ends his lecture on that note.

Of course, Livingston College uses many of the tools and techniques employed elsewhere to motivate students and to enrich the curriculum. But good old-fashioned lecturing remains a central element in its teaching process. McWilliams and his colleagues believe in time-tested teaching methods. They enforce relatively tight discipline, especially at the start of the semester when the tone is set. They give hour-long exams—two each term in introductory courses, usually one in all other courses.

For final exams, a dozen or more sample questions are given out in advance from which three or four are to be drawn for the test itself. "There are no surprises this way," said McWilliams, "but if the students prepare answers for all of the questions, they've done the equivalent of a research paper." Papers, class participation, and exam scores are all considered in giving grades. McWilliams finds that with such ground rules students do learn—even in large classes. And because of McWilliams's popularity, his classes tend to be large, usually 75 or so in lower-division classes, 50 for upper-division, and never fewer than 25 at the graduate level. For the latter two groups, his classes run two to four times as large as average.

In his lectures, McWilliams aims not to transmit a lot of basic information but to provide a "central context" for later discussion. "The one great sin," he says, "is not to be interesting. A lecturer is a performer, he uses hyperbole. In leading a discussion group a teacher must be a choreographer. But in giving a lecture he's on stage." McWilliams tries to change pace every 90 seconds or so. Tell a joke, spin a story, relate an anecdote. Or ask a question. Even with bright students, "attention spans are short."

For beginning lecturers, he recommends close reading of U.S. Army field manuals. The Army's been in the teaching business for a long time and knows what it's doing, he says. McWilliams works hard at his lecturing but also seems to have a natural flair for it. "Carey could teach Ethiopian law and students would sign up for it," says Dennis Bathory, a former student of McWilliams who is now a member of Livingston's political science department. "Students just come to hear him," agrees William Livingston, a graduate student at the college who has taken three courses from McWilliams. He terms the professor's lecturing outstanding.

In teaching, as in statecraft, it appears that tactical skills can be learned but true quality depends on something deeper, more profound, that probably can't be learned. And just as FDR and John L. Lewis never needed plastic men to help them gauge their audiences and develop oratorical skills, neither does Carey McWilliams. Indeed, in his classroom lecturing, McWilliams demonstrates the very rhetorical qualities that made Roosevelt and Lewis so effective in debate. This kind of lecturing has an important place in political science teaching—more so than in, say, sociology or biology. And McWilliams is a master of it.

For more information: Wilson Carey McWilliams, Department of Political Science, Livingston College, Rutgers University, New Brunswick, NJ 08903, (201) 932-4090.

Internships in the Nation's Capital: The Total Program Concept

Internships, work-study programs, and other forms of relevant off-campus experience have become de rigueur for political science undergraduates throughout the country. Nearly four fifths of the educational institutions responding to a recent American Political Science Association survey indicated they offer some kind of off-campus work experience for course credit. And what better place for a student of government to study the subject than Washington, D.C.?

Precisely because a student internship program in the nation's capital is such an obvious idea, it is one which has occurred to many colleges and universities. As a result, the city and government have been flooded of late with such programs—all bartering for the same limited, low-cost housing in the District of Columbia; all vying for quality internships; all competing for high-quality academic instruction for their students.

The Washington Center for Learning Alternatives is a new program in Washington aimed at eliminating at least some of this unnecessary competition and duplication of effort. Established last year by William Burke, formerly the head of the internship program at the University of Massachusetts at Amherst, the center is a non-profit, independent educational institution which enables small colleges with limited resources to offer their students a quality internship experience in Washington.

The center's rapid growth rate is indicative not only of the enormous demand for such a service, but also of the extent to which news of the success of Burke's program has spread, mostly by word-of-mouth, through the educational community. During the fall semester of 1975, the center provided internships for 53 students from 25 educational institutions; spring 1976 saw 104 students from 35 colleges and universities participating in the program. Blessed neither with foundation funds nor major institutional backing, the center began breaking even in May 1976.

The center provides three-month internships in more than 150 congressional offices, the executive branch, the judiciary, public interest groups, and community programs. Three full-time coordinators are charged with developing new internship opportunities, matching students with jobs relevant to their experience and interests, and supervising and evaluating the internships.

The internship is not an isolated field experience at the center; it is one component of a total-program concept. In addition to the work opportunity, the center's program includes seminars, courses, site visits, and enough free time for students to explore Washington independently. Under the program, students work 35 hours and attend one class per week. The classes are small—between 12 and 15 students—and are taught by professionals with PhDs and practical experience in their fields.

This past spring, the center offered 15 courses: Intergovernmental Relations, Bureaucratic Behavior, Race and Politics, Criminal Justice, Consumer Interest Groups, Media and the Government, among others. In addition to the formal courses, weekly lectures and seminars are arranged on a broad array of subjects—such as gun-control legislation, the politics of world hunger, and women and discrimination on Capitol Hill.

The center does not give credit or award degrees; this responsibility rests with the home institution. Students and schools receive a written evaluation of each individual's work, and letter grades are provided if requested. A survey of institutions participating during the fall of 1975 showed that the majority granted between 12 and 16 credits per term.

One of the program's strongest selling points is its ability to provide low-cost housing. The center-owned building consists of 132 efficiencies and 40 one-bedroom apartments, all fully furnished and each equipped with a kitchenette and bath.

One semester at the center costs $700, which includes housing. The participating school may forward the fee directly to the center, add a $100 to $250 fee to the cost of the program for its own administration and handling costs, or charge full tuition over and above the $700 fee. Since there is no membership fee, the program costs the colleges nothing.

Although 9 percent of the center's spring semester students were minority group members, Burke is trying to increase minority and low-income student participation by developing a work-study program scheduled to begin in the fall of 1976. This will enable students eligible for financial assistance to participate in the program and receive 80 percent of their salary from the federal government.

The program has proven attractive to public and private institutions alike. Participating schools range from small colleges like Morris Harvey in Virginia and Allegheny College in Pennsylvania to large state universities such as the University of Pennsylvania and Florida State.

Students are enthusiastic about both their jobs and the program. Those who had found their internships unsatisfactory were given the opportunity to switch to another; most were pleased with their original placement. Though the program is open to all undergraduates with some background in the social sciences, Burke recommends it, in particular, for juniors and seniors. "At that stage," said Burke, "the program is particularly useful in helping students focus in on career choices."

Joyce O'Donnell, a political science major at San Diego State University (which has a pilot program with the center) gives high marks to her internship experience. "The university will decide whether or not to continue the program at the end of this year," said O'Donnell, who has spent the semester working at the Consumer Federation of America. "University officials say they will rely heavily on our evaluation of the programs; everyone from San Diego is enthusiastic about it. Next year, I predict we'll have three times as many students coming to the center," said O'Donnell.

For more information: William Burke, Director, Washington Center for Learning Alternatives, 1503 Connecticut Avenue, N.W., Washington, D.C. 20036, (202) 232-7062.

SUBJECT INDEX

The learning experiences presented in the first two Reports on Teaching are included here in two indexes—a subject index and a faculty index. The subject index is designed for those interested in a particular approach to teaching. It is divided into four main headings: (1) teaching strategies, including various techniques used in the learning experience from lecturing and team teaching to the use of multi-media and computers; (2) focus, indicating the general direction of the studies, whether for career orientation, underprepared students, etc.; (3) evaluation, noting various approaches to grading; and (4) course management, listing those learning experiences that are interdisciplinary or a modification of the traditional approach.

Subheadings are listed alphabetically, and each entry includes the name of the professor, the number of the Teaching Report in which the course is described, and the page number. The number preceding the colon in each entry refers to the Report number; the number following the colon refers to the page number. Thus 2:47 indicates Report on Teaching #2, page 47. Report #1 (March 1976) includes undergraduate teaching in chemistry, history, and psychology; Report #2 (July 1976) includes biology, English, and political science. For a complete listing, including field of study, institution, and the title of the article, the reader should consult the faculty index that begins on page 72.

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Evaluation of Teaching Reports #1 and #2

In an effort to improve these Reports, the editors would like to hear directly from the readers. Your response to these questions will help to determine the future scope of the project.

1. Do you like:	Yes	No
The Reports in general	____	____
Overviews of each discipline as introductions to the problems and issues of the discipline as applied to teaching	____	____
Choices of improved teaching	____	____
Working through disciplinary associations to select examples of improved teaching	____	____
Index	____	____
Format (magazine style written by educational journalists)	____	____
Layout (illustrations, type, lead-ins, titles)	____	____

2. Did you read articles outside your discipline? Yes ___ No ___
3. If you had heard or read about a teaching example before, are the articles on the same subject freshly presented? Yes ___ No ___
4. a. Did you find some new ideas for teaching in either Report? Yes ___ No ___

   b. If yes, did you think of them in terms of:
   _____ Your own teaching
   _____ Faculty at your college
   _____ General improvement of instruction

   c. If yes, specifically which ideas you have tried?

_____
_____
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_____
_____

5. a. Has your teaching behavior changed in any way as a result of reading either Report? Yes ___ No ___

   b. If yes, cite changes.

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6. a. Has your attitude about teaching changed as a result of reading either Report? Yes ___ No ___

b. If yes, cite changes.

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7. a. Have the Reports helped to improve teaching at your institution. Yes ___ No ___

b. If yes, cite ways.

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